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Methods of Reducing

Group Therapy vs. Individual Clinic Interview[1]

L. J. BOWSER, M. F. TRULSON, D.Sc., R. C. BOWLING, and F. J. STARE, M.D.[2]

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EFFECTIVENESS of weight reducing programs can be determined only by careful follow-up. If a subject loses weight for a short time and then regains the weight lost, the program cannot be considered successful. To design an experiment to compare one type of teaching or one type of diet with another method or diet in which the many variables can be eliminated is beyond the range of practicality in out-patient situations. A matching of subjects of similar age, percentage of overweight, sex, emotional stability, and motivation for two dietary programs would indeed be ideal but generally impossible; nor is it possible to use a patient as his own control.

However, since obesity is one of the more important public health problems in this country, this investigation was done to clarify further the effectiveness of methods for reducing regimens, even though many variables would be encountered.

Two methods of reducing regimens will be discussed: (a) the individual instruction by a nutritionist in a nutrition clinic, and (b) group therapy, wherein a group of obese persons with a leader (not a nutritionist) meet for a designated period of time to discuss mutual problems. For control purposes, obese individuals who had not participated in either type of program will be included.

SELECTION OF SAMPLE

The nutrition clinic which contributed data was the Out-Patient Nutrition Clinic of the Peter Bent Brigham Hospital, Boston. This clinic is staffed by an experienced nutritionist and dietetic interns. Patients are referred to this clinic only by physicians. The method of instruction includes a detailed dietary history with social and economic influences considered. The patient is instructed in a diet tailored to his particular situation. Return visits are scheduled by the nutritionist at her discretion. The initial interview with the nutritionist takes approximately 1½ hr.; each succeeding visit, about ½ hr. The cost to the patient depends on his ability to pay, generally $1.25 a visit.

The names of patients instructed in weight control for the last two years in the Nutrition Clinic of the Peter Bent Brigham Hospital were obtained. Random samples of 10 were taken from 10 different groups equally divided between the two years; of these 100 individuals, it was possible to visit 78 in their homes to obtain their present heights and weights. The Public Health Service nomograph (1) was used in plotting all heights and weights.

The subjects from the group therapy method had participated in the Boston Pilot Study which was inaugurated under the auspices of the U. S. Public Health Service in cooperation with the Massachusetts Department of Health and the New England Health Center. Kurlander (2) has discussed this study in some detail. The weight data were taken from a report published by the Federal Security Agency (3). The leaders who were experienced in this type of program included a psychiatrist, a psychologist, graduate students in psychology, a minister, and teachers. The leader's role was to guide, not lead the discussion. The cost to the subject depended on the ability to pay, varying from very small amounts to $2 per session.

The follow-up of the group therapy patients was made in home visits by Public Health Service workers. Percentage of desirable weight was plotted on the nomograph previously mentioned (1).

The control subjects were obese persons who had attended one of the Health Protection Clinics in the Boston area.[3] They were selected at random from

[1] Supported in part by: The Nutrition Foundation, Inc., New York City; Kellogg Company, Battle Creek, Michigan; Sugar Research Foundation, New York City; and General Mills, Minneapolis. Received for publication July 20, 1953.

[2] The authors are grateful to Julia A. Shea and Rita M. O'Connell for their help in this study.

[3] The Health Protection Clinics were sponsored by: the Massachusetts Medical Society; Massachusetts Department of Public Health; American Cancer Society (Massachusetts Division); Massachusetts Heart Association; and the U. S. Public Health Service.

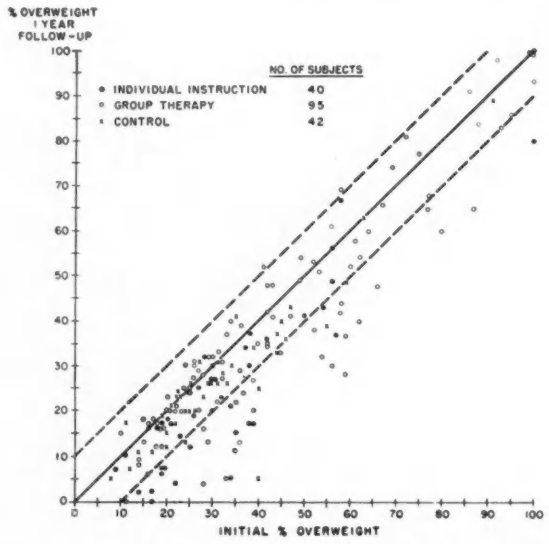

FIG. 1. *Weight loss of three groups of subjects at time of one-year follow-up.*

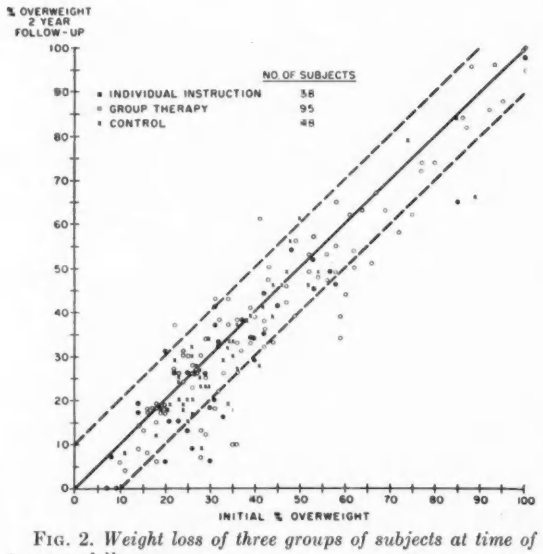

FIG. 2. *Weight loss of three groups of subjects at time of two-year follow-up.*

the results of the Multiphasic Screening program. All had voluntarily attended the Health Protection Clinics, the majority having gone for check-ups or because they were concerned about a specific condition other than obesity.

RESULTS

Of the obese patients followed in the Nutrition Clinic, 40 women were seen at the end of one year and 38 at the end of two years, a total of 78. These were different individuals because it was impossible to follow the same patient at one- and two-year intervals. The average age of the women was 53.7 years for the one-year group with 50 per cent between the ages of 40 and 59, while the two-year follow-up patients had a mean age of 50.8 years with 47 per cent between 40 and 59 years.

The patients participating in group therapy consisted of 95 persons—87 women and 8 men. They participated in both the one-year and the two-year follow-up studies. The mean age of this group was 44, with 50 per cent being between 40 and 49.

The control subjects consisted of 38 women and 4 men for the one-year follow-up and 44 women and 4 men for the two-year follow-up, a total of 90. There were different individuals in these one- and two-year groups, as in the Nutrition Clinic study. The mean ages were 51.2 and 49.3 years with 50 per cent and 64.5 per cent, respectively, being between 40 and 59 years of age.

Figure 1 shows the percentage of overweight of each individual at the beginning of the program and at the end of one year. If no weight change occurred, the data would fall on the solid line. Though there was a tendency for all three groups to lose weight, a vast number fell between "10 per cent loss or gain" shown between the two broken lines on either side of the solid line. Forty per cent of the clinic group, 27 per cent of the group therapy patients, and 19 per cent of the controls lost 10 per cent or more of their original overweight.

Figure 2 shows what happened two years after the initial weighing. There was less weight loss than in the one-year group. A greater number of persons were crowding close to the solid line and were in the 10 per cent ± weight change area. Twenty-six per cent of those treated in the Nutrition Clinic, 20 per cent of the group therapy patients, and 10 per cent of the controls showed a weight loss of 10 per cent or more.

The bar graphs of Figures 3 and 4 show the percentage of excess weight gained or lost after one and two years. This was calculated as follows: If a person was 50 lb. overweight at the beginning, and 25 lb. overweight at the end of one year, he is shown as losing 50 per cent of his excess weight and conversely, if he was 25 lb. overweight at the beginning and 37½ lb. overweight at the end, he is shown as gaining 50 per cent of his excess weight.

The one-year bar graph (*Fig.* 3) indicates that among the patients who lost more than 50 per cent of their excess weight, there was a significantly higher percentage from the clinic group than from the group therapy or control groups. Among those who lost less than 50 per cent of their excess weight, there were no significant differences between the groups treated in the three different ways except in those who lost less than 30 per cent of their excess weight. Here, there were more from the clinic and control groups than from group therapy.

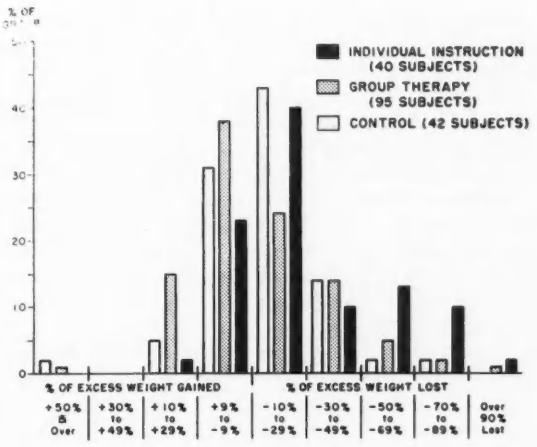

FIG. 3. *Per cent of excess weight lost or gained by three groups of subjects at time of one-year follow-up.*

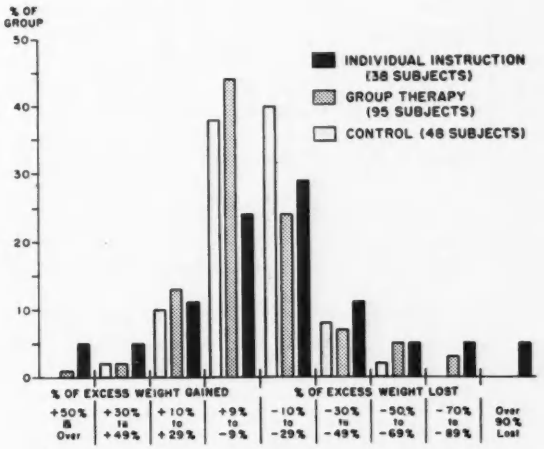

FIG. 4. *Per cent of excess weight lost or gained by three groups of subjects at time of two-year follow-up.*

Essentially the same findings are presented in the two-year bar graph (*Fig.* 4), but to a lesser degree. The disappointing observation with both the one- and two-year follow-ups is the small percentage of subjects who showed any lasting weight loss by either method and the fact that approximately the same number of patients gained.

The next way in which the data were scrutinized was to study the average percentage means of weight change in each group as presented in Table 1. All groups showed a greater mean loss the first year than the second. It is apparent from this table that, when analyzing the data in this way, the individually instructed clinic group had a greater mean loss than the other groups after one year, but the group therapy technique resulted in the greatest mean loss after two years. However, there were no significant differences when the means of any two groups were compared.

TABLE 1

Percentage of excess weight loss by three groups of overweight persons

GROUP	NUMBER OF SUBJECTS	MEAN PER CENT EXCESS WEIGHT LOST	STANDARD DEVIATION	CRITICAL RATIO*
One-Year Follow-Up				
Individual instruction	40	7.95	8.20	−6.13
Group therapy	95	5.08	9.39	−5.27
Control	42	4.79	6.78	−4.57
Two-Year Follow-Up				
Individual instruction	38	2.92	11.36	−1.58
Group therapy	95	3.31	8.15	−3.95
Control	48	2.58	6.13	−2.92

* A critical ratio greater than or equal to 2 is significant.

DISCUSSION

The data presented are discouraging but not surprising. As mentioned before, the objective was to study the influence of two reducing methods which can be used in clinics. The control obese patients who had not participated in either program were used to learn what a segment of the obese population did about overweight.

A small percentage of all three groups showed a tendency to lose weight the first year but also a small percentage of each group gained weight. It should be remembered that only those treated by group therapy are the same individuals followed for two years. It is of interest that the same trends were observed when different subjects were used for a one-year and a two-year study. Because the results are so obvious, as shown in Figures 1 and 2, no more detailed statistics will be discussed.

The question of difference in ages of the groups and the possible influence of these differences were tested. When ages for all groups were plotted against percentage of overweight lost or gained, no trend could be seen.

Those treated by group therapy were initially more obese than the clinic group. It seems to be a common supposition that the fatter a person is, the harder it is for him to lose the extra pounds. However, the differences between the per cent overweight at the beginning (before therapy or dietary instruction) were not great enough to be significant. Also, no trend was observed when the initial per cent overweight was plotted against per cent of excess weight lost or gained.

There can be no comparison of physical diagnoses of the three groups, since those on group therapy had no diagnoses on their records.

The motivation in the two groups may be a factor, but there is no way to estimate this. The differences

in the effect of positive dietary instruction versus group discussions of why people eat excessively cannot be demonstrated by this study. The fact that there was no marked difference in weight reduction, but there was a difference in expense to the clinic, might make it wise for clinics which have many obese patients to include group therapy. Twelve to fifteen patients could be seen at one time, and if the patients requested individual instruction it could be arranged. Nutritionists should acquire skills in group therapy to make this planning effective.

It is possible that the data from both methods of treatment and perhaps the control group might give more encouraging results if assessed after two or three months rather than after one and two years. However, to be effective, a weight reduction program must be evaluated on a long-time basis.

CONCLUSIONS

The results of one- and two-year follow-up studies after two weight reduction regimens have been compared. One regimen was that of individual instruction in an out-patient nutrition clinic; the other was group therapy. For a control group, a random sample of obese people was observed.

There were no outstanding differences in the two treated groups or in the control group, and none of the groups did very well. The clinic group seemed to lose the largest percentage of weight at the end of one year. At the end of the two-year period, clinic patients had lost a higher percentage of their excess weight, but it was also found that a higher percentage of these patients had gained weight as well.

Because of the expense to the hospitals and the lack of evidence that individual instruction is vastly superior to group therapy, it is suggested that nutritionists be trained in the principles of group therapy so that time and money can be better utilized in the clinic.

This study also emphasizes the need for further research on effective methods for changing food habits leading to weight loss and maintenance of proper weight.

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Spotlighting the Food Faddists

Are we in public health making a mountain out of a molehill? If people want to spend their money for worthless and sometimes dangerous products and ideas, should they be discouraged? Actually, it is not at all amusing to realize that thousands of Americans are not able to distinguish between the reports of reputable investigators and the publications of those whose weakness is lack of knowledge and whose strength is super-salesmanship. As all of our citizens become better acquainted with the sources of accurate information, perhaps the appeal of the pseudo-scientists will lessen, because the truth can bring security to those who seek it.

The Food and Drug Administration of the new Department of Health, Education, and Welfare is charged with enforcement of the Food, Drug and Cosmetic Act and with other laws to promote the *purity* and *honest labeling* of foods and drugs. Among many responsibilities, the FDA is concerned that products are named, labeled, and described truthfully.

The Federal Trade Commission has jurisdiction over advertising to prevent the dissemination of false or misleading claims for foods, drugs, cosmetics, or devices sold in interstate commerce. You can help both the FDA and the FTC by sending information in detail regarding the advertising which you question. If the advertisement is published, send a clipping, completely identified as to source, date, and place of publication. If the questionable advertising is on radio or TV, give the date, broadcast time, station, and circumstances.

Both the Bureau of Investigation and the Council on Foods and Nutrition of the American Medical Association are vitally interested in warning the public against foolish and dangerous panaceas.

One should not get the impression that only federal agencies and national professional associations are interested in the problem. Your state, city, and county health agencies want to help eliminate unethical publications when the health of the citizens is thus placed in jeopardy. Products and people will become less dangerous when enough citizens alert themselves to the need for bringing the facts out in the open where they can be considered in the light of truth.

—Adelia Beeuwkes, Associate Professor of Public Health Nutrition, School of Public Health, University of Michigan, Ann Arbor; excerpt from Telecourse Supplement for class of May 3, 1953.

Dietetic Interview or Group Discussion-Decision in Reducing?[1]

ELIZABETH D. MUNVES, Ph.D.

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MANY college health centers are confronted with the dual problem of weight control and a lack of trained personnel to deal with the situation. At New York University, the Health Service enlisted the cooperation of the Home Economics Department when faced with many students who were overweight, i.e., 10 per cent or more above the "ideal" weight for their age, sex, height, and body frame.

On the basis of medical research related to the cause of obesity (1, 2), it was assumed that obesity is due to a positive energy balance. Thus, for these obese students to attain "ideal" weight, a negative energy balance—by reducing energy intake, increasing the energy expenditure, or both—would have to take place. The investigator believed that a negative energy balance could be brought about best by reducing the energy intake. The problem then became related to the modification of food habits to reduce caloric intake.

An extensive review of the literature revealed that several investigators (3–5) have explored various methods of modifying food habits. These experiments indicated that, in influencing groups, the discussion-decision method was more effective than other methods. The two pilot studies (6, 7) of the U. S. Public Health Service have been the only published reports of the effectiveness of the group approach to weight control.

To meet the specific problem presented and also to add to the existing research related to the modification of food habits, the present investigation proposed to compare the effectiveness of two methods, dietetic interview and discussion-decision, of influencing obese college students to attain and to maintain "ideal" weight.

A dietetic interview, as interpreted in this paper, takes place when a subject receives individual dietary instruction by the nutritionist. A discussion-decision situation exists when a group, guided by the nutritionist, participates in discussions of the problems associated with obesity, which lead to the setting up of definite goals for action by each member for himself in the group setting.

Discussion-decision was differentiated in this study from the often-used term "group therapy," the investigator believing that "group therapy" connotes a group approach which uses psychotherapy. The concept expressed as "discussion-decision" (3) seemed to be in keeping with the design of the present study.

PROCEDURE

New York University is an urban university in the center of a large metropolitan area. Almost all of the students live at home and commute by subway and bus. Many live in Long Island, New Jersey, Staten Island, and other remote sections of Greater New York. Consequently, they travel from 40 min. to 2 hr. each way. Classes usually meet once a week for 2 hr. or more. This results in a situation whereby students concentrate their classes so that they need not travel every day. Then, because they have some free days, many students accept part-time employment. These three factors—commuting, a concentrated class schedule, and part-time employment—contribute to a pressure of time, which is reflected in irregular hours and hurried meals, both at school and at home.

Throughout the investigation, the influences described above were determining factors in selecting the subjects, in prescribing the low caloric diets, in choosing the method of teaching which each subject received, and in evaluating the results. To explore the practical aspects of the group approach to reducing and weight control, the design of the experiment was patterned as closely as possible after the usual procedure found in nutrition clinics.

[1] Presented in partial fulfillment of the requirements for the degree of Doctor of Philosophy. This study was conducted under the supervision of Dr. Henrietta Fleck, Chairman, Home Economics Department, School of Education, New York University, New York City. Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 21, 1952.

Subjects

Forty-eight New York University students between the ages of seventeen and twenty-seven were selected by the medical staff to participate in this investigation. By limiting the subjects to this range in age, it was believed that there would be a similar interest in reducing. Care was exercised by the medical staff to exclude those who had obvious maladjustments or who had definite pathologies associated with obesity. A check was made that each subject had no digestive difficulties, i.e., that the digestion and elimination were "normal." Thus, no matter what contributed to its etiology, the cause of the obesity was believed by the medical staff to be due to excessive energy intake.

Design of Study

Fourteen women and ten men were assigned to four discussion-decision subgroups, and fourteen women and ten men comprised the dietetic interview group. The investigator acted as the nutritionist throughout the study in both groups. The students were unaware that they were participating in the investigation.

The study lasted eight months. This was divided into two periods: the first four months, from February to June, 1952, were devoted to teaching, while the second four months, from June to October, were considered as a maintenance period when the subjects received no consultation. At the end of the eight months, the subjects were recalled for a follow-up study.

Collection of Laboratory Data

During the investigation, the basal metabolic rate of each subject was determined once and the hemoglobin value three times: initially, midway, and terminally. The collection of the laboratory data was performed by Health Service technicians. It was possible for constant conditions to be maintained. The Sandford Waterless apparatus was used by the same operator for all basal metabolism tests, to determine the basal caloric requirement.

The hemoglobin value was felt to be important as a convenient and simple check on the nutritional status of the subjects. The Leitz galvanometer was employed by the Health Service staff to determine hemoglobin. If, at any time, the hemoglobin value was below the accepted standard, the subject was immediately referred to the physician. The hemoglobin standard used at the Health Service is (8):

11.5 to 16.0 gm. per 100 ml. for women 14 to 30+ years
14.0 to 18.0 gm. per 100 ml. for men 14 to 30+ years

Representation of Weight Loss

Subjects were weighed dressed, but without shoes, by the nutritionist on the same scales throughout the study. They were weighed every two weeks at approximately the same time of day throughout the first four months and terminally as part of the follow-up study. No weights were obtained during the maintenance period.

The actual weight loss obtained every two weeks for each subject was plotted graphically against the predicted loss (*Fig.* 1). This record provided the basis for comparing the effectiveness of the two methods of instruction.

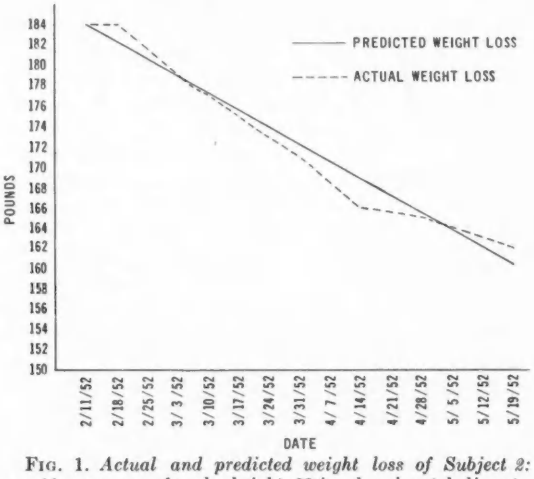

FIG. 1. *Actual and predicted weight loss of Subject 2: age, 22 years; sex, female; height, 66 in.; basal metabolic rate, −19; "ideal" weight, 150 lb.; performance index for instruction period, 93.*

The tables of "ideal" weight used as standards were those of the Life Extension Examiners (11) for women and those of the R.O.T.C. (12) for men.

Recommendations of previous investigators (2, 9, 10) were followed in predicting weight losses which were expressed as pounds per week. These predictions, representing the caloric deficits created by negative energy balances, were obtained by subtracting the estimated energy intake from the estimated energy expenditure.

The caloric value of the diet as prescribed was used as the estimate of energy intake of each individual. In arriving at the predicted weight loss, it was assumed that each subject would adhere to the diet. To meet the nutritive recommendations of the National Research Council (13) and to recognize the practical aspects of obtaining food, such as eating at luncheonettes, it was necessary to allow (a) a 1500-calorie diet for the women sixteen to twenty years of age, (b) a 1200-calorie diet for the women over twenty, and (c) an 1800-calorie diet for all men.

Estimates of energy expenditure were derived from three sources: the basal caloric requirement, the energy expended in muscular activity, and the specific dynamic action of the foods ingested. Using the food nomogram of Boothby and Berkson as given in the *Mayo Clinic Diet Manual* (14), the

investigator determined the basal caloric requirements, making corrections for basal metabolic rates. Subjects seldom reported activities other than attending classes and working in part-time sedentary positions. Fifty per cent of the women's basal requirement and 60 per cent of the men's were estimated as energy expended in muscular activity. Six per cent of the energy intake was allowed for the specific dynamic action of foods. At best, the predicted heat production was only an estimate.

Statistical Analysis

The performance index (15), that is, the actual weight losses expressed as percentages of the predictions, were analyzed by the "t" test (16) to determine whether a significant difference existed between the two groups. Fisher's "F" test (16) was used to determine whether the distribution of the performance index of the dietetic interview group differed significantly from that of the discussion-decision group in terms of variability. Aside from a statistical analysis, the performance indices of the subjects and of the groups were interpreted in regard to various factors believed to influence weight loss.

Rating of Food Records

Because of the close relationship between food habits and obesity, the food records of the subjects were rated three times: initially, midway, and terminally. A seven-day food record was obtained at the beginning of the study and as part of the follow-up study. Midway (at the end of the teaching period) a 24-hr. recall was obtained. A seven-day record was unobtainable at this time because the collection of the data coincided with the examination period. The dietary records were rated both quantitatively and qualitatively. In the quantitative evaluation, the nutritive value of the diets was calculated from tables of food values (17, 18). The diets were rated as either satisfactory or unsatisfactory. The criteria for each rating were:

Satisfactory: diets which showed that all nutrients were provided in quantities equal to two-thirds of the National Research Council allowances.
Unsatisfactory: diets which showed that the intake of one or more nutrients was below two-thirds of the National Research Council allowances.

The Basic Seven (19) was used as a reference standard in the qualitative rating of the same dietary records, with the following criteria:

Satisfactory: diets which included all of the Basic Seven food groups each day.
Unsatisfactory: diets which did not include all of the Basic Seven food groups each day.

Methods of Instruction

Dietetic Interview. All interviews were conducted at the Health Service of New York University. Consultations took place in small offices where an effort was made to have the subject comfortable and at ease. The interviews were by appointment, at a time selected by both the nutritionist and the subject. The time spent in each interview varied from 10 to 60 min., depending on the problems of the subject.

The first interview was one of establishing rapport. In addition, the nutritionist discussed the relationship of energy exchange to weight loss and the determination of the rate of weight loss. The subject and the nutritionist together examined the dietary record to determine what food habits could be modified to produce a negative energy balance. Each subject, with advice from the nutritionist, planned his own meal pattern within the framework of his schedule. He was guided in listing foods to omit from his daily intake. At the end of the interview, each subject left believing he had planned a suitable low caloric diet.

Subsequent interviews took place every two weeks. The content of the consultation depended on the subject's progress. Usually the discussion was concerned with specific problems or questions related to weight loss. The student would indicate the difficulties encountered in adhering to his diet, and the nutritionist would help him find a solution to each problem. In addition, the discussions often included comments about the subject's special interests and the life away from school. If a medical question arose, the physician was immediately consulted.

Although the subjects were encouraged to express themselves freely and to make their own decisions, for the most part the nutritionist directed the discussions and imparted most of the information. It would seem almost inevitable that this situation exists when an individual—the subject in this instance—consults an "authority" on a specific problem.

Discussion-Decision. Using Lewin's (3) experiments as a basis, with guidance from the contributions of Radke and Caso (4) and Radke and Klisurich (5), and being influenced by personal experience in teaching clinic groups, the investigator set up a method of teaching whereby the principles embodied in the dynamics of group discussion were employed.

Four groups, two of women and two of men, participated. There were six women in one group and eight in the other. Each of the men's groups was composed of five subjects. The groups were closed, i.e., after the first meeting no other subjects joined, because the investigator believed that the "group feeling" would suffer if new members were admitted to a group.

Each group met for 1 hr. at the same time every two weeks. The classroom which was used was equipped with tables and chairs, arranged to facilitate group participation.

The first meeting consisted of a "getting acquainted" period. Goals, in the form of reasons why each one wanted to lose weight, were set forth. The believed causes of obesity, the relation of food to energy exchange and obesity, and the non-metabolic uses of food were discussed. Using suggestions from the members, the group listed foods which should and could be included in a diet. These foods were those of the general diet which was mentioned earlier. A series of 35-mm. color slides showing how a low caloric diet could be adapted from family meals was shown. Each subject decided how he would modify his own food pattern to meet the calorie-restricted diet. At the end of the meeting, the nutritionist, acting as the leader expert, asked for a decision from the group. It was at this point that each member, deciding for himself as a member of the group, set up his own goal for keeping the diet.

Subsequent meetings were devoted to a progressive development of group rapport as well as a discussion of weight loss. Subjects who had been successful offered suggestions to those who had not. Questions arose concerning the substitution of foods. Any questions which were beyond the scope of the nutritionist were carefully noted and an explanation brought to the next meeting. In closing each session, the leader again asked if the subjects believed they would be able to follow the diet, thus creating a "decision-situation" each time.

After each group meeting and each individual interview, the investigator recorded what took place. In the account of the group meetings, such events as each subject's participation and attitude and members' suggestions for solving problems were noted. Similar records were kept about the subjects who received individual instruction.

The time spent by the nutritionist in both the dietetic interviews and the discussion-decision groups was recorded. As part of the follow-up study, each subject was asked to fill out a check sheet which evaluated his reaction to the method of instruction he had received.

RESULTS

Of the forty-eight students who participated, forty-three remained as subjects throughout the investigation. Three dropped out during the teaching period and two were not available for the follow-up study.

The statistical analysis showed that there was no significant difference in either the means or the distribution in terms of variability between the dietetic interview and the discussion-decision.

An examination of the data on weight loss offers another basis of comparison. The mean performance index, as set forth in Table 1, revealed that the discussion-decision method was as effective as the dietetic interview in attaining weight loss during the instruction period (the first four months), but the dietetic interview was more effective in maintaining weight during the second four months. However, after the follow-up study, when the mean performance index was determined for the entire investigation, it was revealed that the dietetic interview had been more effective over the eight months.

TABLE 1

Mean performance indices of discussion-decision and dietetic interview groups

GROUP	MEAN PERFORMANCE INDEX		
	4-month instructional period	4-month maintenance period	Entire 8-month period
Group Discussion-Decision			
All groups	45.27	−18.62	20.14
Women	45.43	5.68	36.59
Men	36.44	−25.89	17.56
Group I (women)	66.16	0.83	40.67
Group II (women)	38.70	−29.10	3.50
Group III (men)	29.40	8.80	20.00
Group IV (men)	45.25	−69.00	14.50
Dietetic Interview			
All subjects	45.43	5.68	36.59
Women	35.38	9.08	30.92
Men	58.50	4.60	43.40

The investigator spent 78 hr. 5 min. teaching the subjects in the dietetic interviews, but only 31 hr. teaching those in the discussion-decision groups.

Tables 2 and 3 present the weights and performance indices of the men and women in the discussion-decision groups and in the dietetic interviews. A positive performance index indicates a weight loss; a 0 performance index, neither a weight loss nor weight gain; and a minus index, a weight gain.

By June, the end of the training period, all but two subjects had lost weight. Twenty-one subjects continued to lose over the maintenance period, and thirty-four lost weight during the entire investigation. Only one subject, No. *17*, achieved his "ideal" weight. There was a high incidence of weight loss under 5 lb., yet there were several who lost from 15 to 25 lb. However, the expression of pounds lost is meaningless without reference to the subject's physiologic rate of weight loss. This has been expressed in terms of the performance index.

DISCUSSION

The women in Group I had the highest performance index of the discussion-decision groups both for the first interval and for the entire study. This group was considered to be the most dynamic of the four, as indicated by such observations in the investigator's notes as: members seldom missed a meeting, they were prompt, the group had many suggestions for one another with respect to mutual eating prob-

TABLE 2

Weights and performances of women and men in discussion-decision groups

SUBJECT	WEIGHT			PERFORMANCE INDEX		
	Initial	Midway	Final	4-month instructional period	4-month maintenance period	Entire 8-month period
			Women			
	lb.	*lb.*	*lb.*			
1	118¼	116	116¼	80	−6	26
2	184	162	158	93	33	76
3	182	156½	177	107	−69	9
4	216	212	204	17	27	25
5	121	115	112½	42	20	47
6	158	147½	147	58	6	61
7	189	—	—	—	—	—
8	166¼	164¼	169	28	−50	−29
9	208	206	206	12	0	4
10	140	132	—	57	—	—
11	156	139½	139	84	3	56
12	134	131½	138	19	−51	−23
13	170	154	159	71	−35	36
14	172	172	179	0	−36	−23
			Men			
15	224	210½	220	53	−29	7
16	208	204	218	20	−53	−26
17	225	208½	181	50	110	100
18	206	207	220	0	−41	−45
19	221	216	201	24	57	64
20	188¼	173	178	69	−60	56
21	204	202	216	6	−43	−35
22	198½	180	187	84	−140	48
23	229½	—	240	—	—	—
24	210	202	214	22	−34	−11

TABLE 3

Weights and performances of women and men receiving dietetic interviews

SUBJECT	WEIGHT			PERFORMANCE INDEX		
	Initial	Midway	Final	4-month instruction period	4-month maintenance period	Entire 8-month period
			Women			
	lb.	*lb.*	*lb.*			
25	146	138	137	66	12½	50
26	148	147½	150	7	−11	−11
27	170	167	—	11	—	—
28	175¼	165	165	30	0	22
29	146½	143	133	50	76	80
30	160	157	153	14	10	20
31	178	172	165	34	28	39
32	130	129	127	7	11	15
33	194	—	—	—	—	—
34	166	162	167	18	−16	−3
35	150	144	147	54	−30	18
36	129	122	122	50	0	36
37	138	129	128	50	12½	55
38	132	127	126	69	16	50
			Men			
39	205	198	201	31	−16	11
40	205	186	198	135	−75	20
41	195	186	182	32	15	37
42	185	176	175	34	5	33
43	202	193	183	28	43	59
44	211	184	190	107	−66	58
45	197	196	190	6	29	31
46	241½	210¾	196	83	67	87
47	194	192½	191	8	8	16
48	204	172½	168	121	36	82

lems, the conversation seemed to be among the members rather than directed solely to the nutritionist, and the interest in achieving weight loss was high.

Tables 2 and 3 indicate that the performance index on an individual basis was highest during the four-month instruction period. Of interest is the fact that the three most successful subjects—No. *17*, No. *46*, and No. *48*—were all men.

There was no indication that the degree of the caloric deficit manifested itself in amount of weight lost. However, it is important to note that many of the subjects, particularly the women, had small caloric deficits. An example is Subject *1*, who, because of a low caloric expenditure and high nutritive needs, was expected to lose only ¼ lb. per week. Her performance index of 80 indicates that she nearly met this prediction.

The data demonstrate that a low basal metabolic rate is important in proportion to its influence on the caloric deficit. Striking examples of this are found in Subjects *16* and *17*. Both possessed basal metabolic rates of −28. However, Subject *17*, because of his greater surface area, created a greater caloric deficit than Subject *16*. A comparison of the over-all performance index indicates that Subject *16* had a performance index of −26 and Subject *17* of 100.

Other possible factors which might influence the rate of weight loss, such as the per cent of overweight, age, and work experiences, were explored. There was no appreciable difference due to these factors in the performance index of subjects in either the dietetic interview group or the discussion-decision group.

Some interesting observations can be made regarding patient and family history in relation to weight loss. Nearly all subjects indicated they had been obese "ever since I can remember." However, the duration of obesity did not seem to affect a subject's ability to lose weight. Thirty-seven of the forty-eight subjects indicated that their mothers might be considered to be heavier than the "ideal" weight for their age. Seventeen reported having two or more obese members in the family. The five sub-

jects who said they were the only overweight members of their families had over-all performance indices of 100, 80, 15, −3, and 59.

It seems expedient to suggest possible blocks to motivation to lose weight which might have existed. These observations are based on the progress notes kept throughout the investigation. Perhaps the subjects who participated in the discussion-decision would have reacted better in the dietetic interview, and vice versa. More extensive screening might have revealed that the subjects who failed to lose were emotionally disturbed. Perhaps some may have been reacting to school pressures or tensions, to social pressures, or to world tensions by eating more food.

However, even though subjects were motivated to lose weight, there are possible forces which might have blocked their adhering to a low caloric regimen, such as cultural values held both by themselves and by their families. Among these are: ethnic, religious, and geographic food patterns which result in high caloric diets; social pressures embodied in the serving of high caloric snacks to guests; and the often-held family belief that a fat child is a healthy child. As Lewin (3) pointed out, to modify food habits, one must reach the person who controls the channels of food. In this study, this person was the mother of the family. In the light of these forces, the teen-age subject who lives at home would have difficulty in modifying his food habits.

In the follow-up evaluation, the subjects seemed to be equally divided between their preference for the dietetic interview and the discussion-decision method. However, most subjects indicated that suggestions from group members who encounter similar problems might prove valuable.

The rating of food habits, both quantitatively and qualitatively, demonstrated a preference for high caloric food. Among those preferences which appeared most frequently were: candy, cake, pastries, carbonated beverages, and sugar. Meals, usually breakfast, were often omitted. The men spoke of allowing little time for meals; consequently, they ate rapidly. The food habits of some subjects showed an improvement while those of others showed some modifications. Because there were such wide variations in ratings, no conclusions could be made concerning a comparison of the subjects of the dietetic interview and of the discussion-decision, of those who lost weight, and of those who maintained weight.

Because of the lack of cooperation of subjects, the collecting of hemoglobin values was not successful as a check on the nutritional status. This test did, however, serve to indicate the general health of the subjects. Thirteen of thirty subjects were found to have low or substandard hemoglobin values.

SUMMARY

Techniques of bringing about weight loss in obese college students were studied in an experiment designed to compare two methods of teaching: the individual dietetic interview and group discussion-decision.

During the first four months of the investigation, which were devoted to dietary instruction, the group discussion-decision method was as effective as the dietetic interview in influencing subjects to lose weight. During the second four months, the dietetic interview was more effective in influencing subjects to maintain weight. However, the mean performance index for the entire investigation of eight months—the instruction and the maintenance periods—indicated that the dietetic interview was more effective than group discussion-decision in influencing subjects to lose and maintain weight.

The investigator found the discussion-decision method a practical and effective approach to the problem of reducing. Through increased use and additional research, this method may become even more effective in the attainment and maintenance of weight loss. The need for educational research to develop further the discussion-decision method is indicated, with attention to such areas as the training of leaders, the development of screening devices, and the exploration of methods, techniques, and audio-visual aids for various kinds of groups. Discussion-decision may be used to teach many clinic groups.

It is important to note that these conclusions and observations are limited to the present study which involves only forty-eight subjects. These subjects were members of a special group, college students; were of a particular age, seventeen to twenty-seven; and were from a specific situation, New York University. Because of these limitations, too much significance should not be attached to these results in relation to the immense problem of obesity. However, this experiment represents an effort on the part of the medical staff at the Health Service and the Home Economics Department to meet the specific problem at New York University.

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Federal Action on Low-Sodium Foods

In November, the Food and Drug Administration of the Department of Health, Education, and Welfare announced two actions to protect persons suffering from some types of heart disease, or from high blood pressure, who are on "low-sodium" or "low-salt" diets.

The aim of these actions is to improve the labeling of special dietary foods and of certain frozen vegetables commonly used in low-salt diets, so that patients and physicians will be better able to calculate the sodium intake from such foods.

In one action the Department published a statement of policy in the *Federal Register*, to the effect that it will henceforth expect all labels of frozen vegetables to declare the presence of salt whether added directly or indirectly to these products.

FDA explained that frozen vegetables are quite commonly supposed to be salt-free, and on that account are largely used in low-salt diets. Actually salt brine is used in the preparation of certain of these vegetables, particularly frozen peas and frozen Lima beans, as a means of quality separation (the younger and more tender peas or beans will float in the brine). This process may add a substantial amount of salt to the frozen product which would be of significance to persons seeking to restrict their salt intake.

In the second action, the Secretary of the Department of Health, Education, and Welfare gave notice in the *Federal Register* that public hearings will be started on December 15, in Washington, to amend the FDA dietary food labeling regulations so as to require label declaration of sodium in low-sodium foods on the basis of their sodium content in milligrams of sodium per 100 gm. of the food. In a statement recommending that the hearings be held, FDA said:

> Within recent years low-sodium diets have come to be widely used in medical practice in the prevention of edema, a complication in some types of heart diseases and other diseases, and in the treatment of essential hypertension. We have reviewed the labels and determined the sodium content of a large number of commercially prepared foods that are represented or purport to be of value in low-sodium diets. They are labeled as "salt (or sodium) free," "low salt," "unsalted," "packed without added salt," "for use on low-sodium diets," etc. Less than one-third of the labels declare the amount of sodium present. The majority of the labels declaring the amount of sodium express it in terms of milligrams per 100 grams, although such terms as "sodium 0.02%" and "sodium content not more than 50 milligrams per 100 grams" are used. In some instances, where the labels declare "salt free" without stating the sodium content, substantial amounts of sodium were contributed by leavening agents, sodium glutamate, or other ingredients.

FDA said that the declaration of sodium content in terms of milligrams per 100 gm. of the food conforms with the recommendation of the American Heart Association and the Council on Foods and Nutrition of the American Medical Association.

Emotional Factors in Obesity and Weight Reduction[1]

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THIS is a report on a study undertaken to predict success or failure in weight reduction in obese young women. The main objective of the paper is to describe the psychologic and psychiatric procedures employed to classify these overweight women into two groups: (a) those expected to lose weight in a controlled diet program, and (b) those likely to do poorly in such a program. The procedures developed can be more closely evaluated by first outlining the psychologic theory which makes this grouping meaningful.

It was realized after the fundamental physiologic studies of Newburgh in 1931, 1942, and 1944 (1–3) and of Bruch in 1939 and 1940 (4) that organic factors in the etiology of obesity had been overemphasized. According to Hamburger (5): "A review of the pertinent literature on obesity fails to reveal any intrinsic metabolic, endocrinologic or central nervous system abnormality in the usual case. The symptom of hyperphagia has been the only consistent finding in obese patients."

Until recently, however, all cases of obesity due to psychologic causes were classified together (6, 7). It is the belief of the authors, based on clinical observation, that at least two main subdivisions must be made; (a) obesity *without* serious emotional disturbance, and (b) obesity *with* serious emotional disturbance. To the casual observer, the differences between the two groups may not be striking; most obese people (except for a small number of glandular or constitutional cases) seem very much alike on the surface. However, in the first group of obese patients, in the relatively simple psychologic situation, personal adjustment is similar to that found in the "normal" population. There are no signs of neurosis. On the contrary, the stability of such individuals is comparatively good. Although their obesity is largely a result of psychologic forces, these are forces of no more serious character than those which occur in other "normal" people whose defenses against anxiety take other forms, e.g., overwork, thrift to the point of self-abnegation, fantasy, and so on. Reducing for this first group is possible. To use Bruch's term, reducing is "realistic" for them (7). Dieting for this group is, of course, difficult, but with a moderate amount of help, support, and guidance from the physician or nutritionist, reasonable results may be expected.

In the second group, on the other hand, more serious conflicts are present, often deeply buried in the unconscious mind. The psychopathology of these conflicts has been described frequently in the literature (8–12), and only a brief summarization of the complex emotional forces at work will be given here.

Losing weight is an intellectually desirable goal to individuals of this group, but it never becomes an emotionally possible goal without psychiatric therapy (and it may not then). "Loss of weight disturbs them in spite of their conscious efforts to bring this about" (11). Food and affection are often confused by these people, and when food intake is cut down, their already marginal feelings of security are threatened. Richardson says (13) that "perhaps the most frequent complaint is a feeling of emptiness, a boundless void which can never be filled or which recurs immediately after eating." Another author states (8) that, in certain cases, the excessive physical size is symbolic of greatness and of special power: "In fat people overeating is the most important means of relieving the felt dissatisfaction. It fulfills the primitive hope that eating will make up for the defect." Of course, it does not, and "self-hatred, guilt, withdrawal and fantasy" can result (7).

In one sense these people are like the alcoholic who comes for help. "Fix me up, 'Doc,' so that I won't get so drunk, but I must keep on drinking"—

[1] The dietary experiments were supported in part by the Gannett Nutrition Fund and in part by an appropriation from the State of New York through the State University. Received for publication August 13, 1953.

[2] The dietary experiments were supervised by Charlotte M. Young, Ph.D., of the School of Nutrition, to whom the authors wish to express appreciation for interest and cooperation in the psychologic phase of this research.

or like the woman who felt compelled to wear men's clothing who wrote to her psychoanalyst: "If you can help me to remove these feelings of anxiety and these headaches, I will be grateful to you. However, as much as I wish to be helped, I don't want you to change me so that I will begin to wear dresses" (14).

In other words, realistic motivation is usually impossible in obese persons who are seriously disturbed because the overeating, as well as the obesity itself, is an integral part of the life adjustment. For this reason, Bruch has sounded a warning (7) that reducing for these individuals is an "irrational goal," and if reducing is forced upon them, various degrees of serious emotional breakdown can occur. Consequently, the early grouping of obese patients as to their relative stability or instability becomes a valuable procedure for guarding emotional as well as somatic health.

METHODS

The data presented here were obtained by examining subjects in two recently completed dietary experiments at Cornell University. Subjects were women in the college undergraduate age range with an average weight excess of approximately 25 per cent. They lived in their usual dormitory situations but were fed a weighed diet three times daily for approximately four months. The dietary aspects of these experiments have been described in detail by Young (15, 16).

During the first experiment it became apparent (from some improbable weight losses and the subjects' statements) that not all participants were adhering strictly to the diet. Despite a clear understanding and commitment about the dieting procedure, certain women admitted to the nutritionist that they were unable to cooperate completely. After the first dietary experiment had been completed, this situation was brought to the attention of the authors and a procedure for screening future subjects was devised and tested as follows.

Experiment I

The first psychologic study was designed and carried out six months after the first dieting procedures were finished. All subjects who were available were invited to participate in these psychologic studies. Each of the six subjects on campus responded favorably, and each received a 1-hr. psychiatric interview and 3 hr. of psychologic testing. The purpose of the psychiatric interview was to obtain a rating of the individual's emotional stability, but not to provide therapy or a differential diagnosis as such. Psychologic tests were administered in this order: (a) Thurstone Personality Schedule, (b) Bell Adjustment Inventory, (c) Bernreuter Personality Inventory, and (d) Minnesota Multiphasic Personality Inventory.[3]

The psychiatric interview[4] and the psychologic testing[5] were carried out independently, and results were compared after all six subjects had been seen by both investigators.

Dietary performance of each subject was rated by the nutritionist at the conclusion of the dietary regimen. These ratings were then compared with findings on emotional stability. The dietary rating took into consideration the subject's weight loss, "ability to adhere to dietary requirements," and "attitude toward the whole experimental situation." The rating was expressed as the nutritionist's answer to this question: "Given a large number of candidates to choose from again, would you accept this subject?" She rated certain subjects as clearly acceptable for dietary experiments ("yes"), and certain others as clearly less acceptable ("no").

Dietary performance ratings by the nutritionist, psychiatric appraisals, and findings from psychologic tests were independently formulated throughout.

Experiment II

The results of Experiment I suggested that, from psychologic data obtained by testing, *prediction* of success on a controlled, weighed diet was feasible. Accordingly, the psychologic investigation in Experiment II was carried out *before* eleven new subjects began the reducing diet, and predictions were made with regard to the success of each. These predictions were then compared with the final weight loss ratings made by the nutritionist, again without knowledge of test results. Because the psychiatric interview and the psychologic tests were in essential agreement on the relative emotional stability of subjects in Experiment I, the more time-consuming psychiatric interview was not used in Experiment II. In this instance, subjects were tested in a group with the: (a) Bell Adjustment Inventory and (b) Psycho-Somatic Inventory. The other tests employed in Experiment I were discarded because they did not appear to increase predictability above that obtained from the Bell test alone. The Psycho-Somatic Inventory was included in this second battery because it provides more opportunity for expression of somatic complaint.

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[3] All four tests are of the paper-and-pencil variety which can be administered to groups. The first three mentioned can each be completed in approximately ½ hr., while the MMPI usually requires a full hour. The tests are scored by using "keys" which indicate the typical or "normal" response to each item. The individual's total response pattern is then evaluated by reference to "norms" published with each test. These "norms" are available for various facets of personality or personal adjustment which the test is intended to measure. The value of findings of a psychologic test depends partially on the training of the examiner in administration and interpretation of such tests.

[4] Conducted by C. D. D.

[5] Conducted by J. S.

RESULTS

The relationship between ratings on emotional stability and ratings on dietary performance is shown in Tables 1 and 2. Table 1 indicates that none of the three unsatisfactory dieters in Experiment I (Subjects *D*, *E*, and *F*) were found to possess "good" emotional adjustment by the examining psychiatrist. Further, the emotional adjustment scores on the Thurstone, Bernreuter, and Bell tests were in agreement with the psychiatric findings. That is, the three unsatisfactory dieters posted poorer scores for emotional adjustment than the three satisfactory dieters on all of these tests. The fourth test, the Minnesota Multiphasic, also showed consistent differences between the two groups in six of the ten adjustment syndromes which this test measures.

Table 2 shows the relationship between the pre-diet scores for the Bell Adjustment Inventory and the post-diet ratings on success in dieting. It can be observed that three of the four subjects whose tests indicated "good" stability were successful dieters. On the other hand, only one of the seven subjects whose tests indicated "poor" stability subsequently met with success in dieting.

The findings from the second psychologic test used in Experiment II, the Psycho-Somatic Inventory, corroborated the results of the Bell test and also correctly predicted dieting performance in nine of eleven cases.

DISCUSSION

Although necessarily qualified by the small number of subjects, the evidence supports the conclusion that a high proportion of candidates unsuitable for dieting can be screened out by a brief and relatively direct assessment of emotional stability. Of course, one cannot generalize from these results to other groups without further experimental investigation. However, clinical observation suggests that these findings may hold for other adults as well.

In order to make the characteristics of these two groups of obese girls more clear, two case histories will be presented from clinical notes taken in Experiment I. The first case is from the relatively "good stability" group, the second from the less stable group.

Case B. This girl of nineteen stated that she entered the diet study because "I would like to lose weight; I think I would look better." She is a big girl with a large bony frame initially weighing 182 lb. She has always been quite well proportioned and at no time in her life has being overweight been a special handicap to her.

She is an only child and her home life has been happy. She is more like her mother than her father and can talk to her mother about anything. She was given a good education along sexual lines by her mother. She said, "I like the friendship of boys and some day I hope to meet the right person. In the meantime I like to have fun and kid around a lot. I enjoy teasing if I get teased back. I also like horseback riding, reading, studying, and some activities. I like to help people. I am a great one to stand up for the underdog, either a person or an animal. I was always the teacher's pet and would do things like erasing the blackboard. In high school I found it difficult to be friendly with boys and girls but I think I conquered it. I was an only child and spent my time with older people."

Her primary vocational objective has been to be a physician, and for her first year in college she took a premedical course. She has recently changed her objective to nursing, however, because "being a physician is too long a course of study. Women are handicapped in it. I am not interested in practicing to the extent that one would have to do, being unmarried and a lot of other things".

This girl is an alert interested person. She is sensitive. She does a good bit of constructive thinking on her own. She appears happy and cooperative but not necessarily satisfied. She has made a social adjustment under a more than average handicap. She is not suspicious nor unduly critical. She is willing to work for what she wants, and she can take responsibility commensurate with her age. She is honest. She has maintained her dieting weight loss.

Case F. This girl of nineteen was cooperative and pleasant in the psychiatric interview. She initially weighed 168½ lb. It was obvious that she was anxious and depressed. Toward the end of the dietary experiment she reported to the nutritionist that she had been breaking the routine.

She said to the examiner, "I felt compelled to eat. I ate especially fattening things, peanut butter and cookies. I wandered into other people's rooms and stole their food. After I lost some weight I deliberately went out and ate and gained it back. I knew all the time what I was doing."

Her actions caused strong feelings of guilt. The guilt, depression and anxiety led her to seek out the nutritionist frequently and then to accept psychiatric referral. When the evaluation interview was held in the fall of 1951, after a summer had intervened, her disturbed feelings had increased rather than decreased.

Her home life had not been happy. She was in open conflict with her father who, for one thing, had threatened many times to cut off her financial support at college. "I

TABLE 1

Dieting success and emotional stability in Experiment I

SUBJECT	DIETING SUCCESS		EMOTIONAL STABILITY	
	Nutritionist's rating	Weight lost	Psychiatrist's rating	Psychologic test rating
		lb.		
A	Yes	21.5	Good	Good
B	Yes	23.5	Good	Good
C	Yes	22.7	Good	Good
D	No	13.7	Fair	Poor
E	No	12.0	Poor	Poor
F	No	9.0	Poor	Poor

TABLE 2

Dieting success and emotional stability in Experiment II

NUTRITIONISTS' RATINGS ON DIETING SUCCESS	BELL EMOTIONAL ADJUSTMENT SCORES	
	Good	Average and below
Yes*	3	1
No	1	6

*Independent ratings on diet success were made by two observers and were in agreement in each case.

hate my father. I can't talk to my mother. I don't want to go home for my vacation."

She had few close friends. She had, however, dated the same boy for three or four years. She complained that "he sometimes dates other girls," and showed much anxiety over this.

In summary, it could be said that she was sensitive, emotionally tense and disturbed, anxious, fairly seriously depressed; she suffered from feelings of rejection, shame, inferiority, and dependency. At no time was she clear about her reason for entering the dietary experiment.

The contrast between these two cases is typical of the contrast between the other successful and unsuccessful dieters. In general the stable group cooperated well, lost weight, and maintained the weight loss. They appreciated the help they received and profited from it. Losing weight was a goal that was "rational"; and, even though sticking to the diet was not easy, they were able to do it with the understanding help and support of the nutritionist and dietitians.

On the other hand, the unstable group lost less weight, broke the diet more frequently, felt much more tense while dieting, and did not maintain their weight loss as well. Losing weight was an "irrational" goal, and was, in fact, a threat to their safety rather than a help to their general adjustment. It is most revealing that all three unstable girls from Experiment I and five girls from the unstable group in Experiment II sought help in the Mental Health Clinic during or after the experiment.

These results indicate that psychiatric and psychologic studies of this kind could contribute to the selection of those obese individuals who can profit from consultation with the nutrition counselor, be he nutritionist or physician, or both. It is quite clear that this stable group is effectively helped to lose weight by qualified nutritionists, general medical practitioners, or internists. In addition to prescribing a proper diet, a "must" factor in treatment is the understanding of the patient as a whole. Parson and Crispell note (17): "The main role to follow in handling these people is not to take away food unless something else is substituted which they can use to relieve their anxiety—and provide security. This 'something' usually consists of support, reassurance, interpretation, and an attempt to help them in the resolution of their anxieties."

It also follows that if a patient's anxiety is increased, weight loss is less likely to occur. Criticism of the patient or his performance will, of course, increase anxiety. Similar effects take place when the unstable patient is told directly or by innuendo that some kind of disaster lies ahead if reducing is not accomplished.

The psychiatric implications of instability among obese patients are likewise worthy of note. Treatment procedures will vary from case to case, but psychiatric consultation and advice may lead to advantageous results in these truly psychosomatic problems.

SUMMARY AND CONCLUSIONS

Obese young women can be divided into two groups, i.e., the stable and the relatively unstable, by the use of psychiatric interviews or careful psychologic testing. Valid predictions relative to success in adhering to a dietary regimen can then be made from these interview or test findings.

Obese young women in the stable groups in these experiments seldom broke their diet, lost weight more effectively, and, in general, maintained their weight loss. Those in the unstable groups more frequently broke the diet, lost less weight, and did not maintain their weight loss as well.

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Potatoes which were washed and packaged in 10-lb. and 50-lb. bags brought 20 cents more per hundred pounds than unwashed potatoes in a joint marketing project of the U. S. Department of Agriculture and the state of Maine. Tests also showed that labeling with variety name led to repeat orders for given varieties.

Effect of Protein Source on Specific Dynamic Action[1]

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LAVOISIER recognized the fact that the ingestion of food causes an increase in the heat produced by the body. This effect of food in raising the metabolism above the basal level is designated as specific dynamic action (SDA) and is defined as the increase in calories above the basal metabolic rate, following the ingestion of a meal.

It was shown by Rubner (1) that proteins increase the heat production following its ingestion, as much as 30 per cent above the basal, while carbohydrates and fats cause an increase of 6 per cent and 4 per cent respectively. In addition, Rubner demonstrated that the rise begins within an hour, reaches its maximum in approximately 3 hr., and continues above the basal level for several hours more. The term "SDA" was given by Rubner to this increase in heat production. Modern experimental work shows quite clearly that the term should be considered as generic rather than specific, in that the total rise in heat production which follows the ingestion of any of the primary food substances may be the result of several rather than of one specific process.

Wide values have been reported for SDA. The most extensive study was made by Benedict and Carpenter (2) who found that the SDA of a rich protein diet was about 12 per cent of the metabolized energy ingested. Abel (3) fed a protein meal consisting of 123 gm. protein and 5 gm. fat and observed a SDA of 20 per cent during the third and fifth hours. Goldzieher and Gordon (4), using a small meal consisting of two egg whites, toast, and tea, obtained an increase of 13 per cent in heat production after 2 hr. Tuttle *et al.* (5), using 25 gm. protein (150 gm. lean beef and 30 gm. egg white) compared the specific dynamic effect between old men and young men over a 4½-hr. test period. The SDA of the young men reached its peak in 2 hr. when it was 12 per cent greater than the basal level; that of the older men reached its peak in 3 hr. when it was 20 per cent greater than the basal level.

The SDA of protein in normally nourished animals was assumed by Rapport and Beard (6) to be due to the sum of the separate effects of the constituent amino acids. But, it was concluded earlier by the same workers that amino acids contained in a protein did not, when that protein was fed to a dog, undergo the same metabolism as did the same substance when given in the form of free amino acids. It was postulated by Weiss and Rapport (7) that the SDA of proteins might be due to resynthesis of certain amino acids into more complex forms having a dynamic effect which was different from that of the amino acids themselves.

Rapport and Beard (8) observed that six proteins of both animal and plant origin, namely, beef, casein, gliadin, codfish, chicken, and gelatin given to dogs in portions containing 6 gm. nitrogen showed approximately the same SDA. Forbes and Swift (9) felt that a nutrient fed alone was never metabolized alone and that the apparent energy expense of utilization, the SDA, was much affected by the nutrient combination in which it was metabolized and by the method of disposition of the absorbed nutrients by the subject. In other words, the dynamic effects of diets were not the additive dynamic effects of their components. Thus, the prevalent idea that the dynamic effects of diets vary with their protein contents is incorrect, and inasmuch as there is no scientific means of apportioning energy values among dietary constituents, the dynamic effects of individual foods or nutrients are without significance as constants.

Few experiments have considered the effect on the SDA of the source of the protein. Benedict and Carpenter (2), undertaking the study of the effect of protein source on SDA, found no material difference in proteins of animal and plant origin in this respect, but the comparisons were complicated by the fact that the experiments were made with different individuals and with different experimental plans.

[1] This research was generously supported by a grant from Cereal Institute, Inc., Chicago. Received for publication July 27, 1953.

TABLE 1

Basal metabolic rate of subjects

SUBJECT NUMBER	AGE	HEIGHT	WEIGHT	SURFACE AREA	BASAL METABOLIC RATE	DEVIATION FROM AVERAGE
	yr.		*lb.*	*sq.m.*	*calories/sq. m./hr.*	*%*
1	22	5′4″	140	1.66	30.8	−16.4
2	22	5′7″	121	1.61	34.9	−5.4
3	21	5′4″	116	1.53	30.1	−17.9
4	22	5′7″	152	1.80	30.3	−17.5
5	25	5′3″	118	1.55	35.3	−3.6
6	20	5′2″	109	1.47	31.2	−15.8
7	22	5′7″	121	1.61	34.4	−6.5
8	24	5′7″	139	1.72	31.1	−15.0
9	20	5′2″	114	1.50	34.7	−6.3
10	22	5′4″	139	1.67	34.0	−7.8
11	22	5′0″	95	1.34	37.7	2.1
12	23	5′7″	129	1.66	29.7	−19.0
13	22	5′0″	92	1.33	38.8	5.0
14	26	5′2″	117	1.52	35.0	−3.1
Mean	22.4	5′4″	121.6	1.57	33.4	−9.0

In the experiment herein reported, the effect of the source of the protein on SDA was studied. For a valid comparison, the group of subjects was fed meals of the same protein, carbohydrate, fat, and caloric value, the only variable being the source of the protein.

PROCEDURE

Fourteen normal women ranging in age from twenty to twenty-six years served as subjects. The age, height, weight, and surface area of each member of the group are shown in Table 1, as well as the basal metabolic rate of each subject and the per cent deviation from the average of her age group. The data show that although the tendency is toward the negative side, only six subjects fall outside the normal range of ±10 per cent.

Each subject ate two test meals, one consisting of protein only of animal origin, and the other consisting of protein only of plant origin. The content and caloric value of the two meals are shown in Table 2. It will be noted that the protein, carbohydrate, fat, and caloric values of both meals are practically the same.

Each subject came to the laboratory in the early morning, having been without food for 12 hr. After 2 hr. of bed rest, basal oxygen consumption per minute was determined. Immediately following the basal determination, the subject ate the test meal and returned to bed rest. Oxygen consumption determinations were made 1 hr. after the meal, 2 hr. after the meal, and then every 30 min. for the remainder of the 4½-hr. period.

A Benedict-Roth basal metabolism machine, from which the subject breathed oxygen through a closed circuit, was employed throughout each test period.

TABLE 2

Composition of the animal- and plant-protein meals

FOOD	WEIGHT	PROTEIN	FAT	CARBOHYDRATE	CALORIES
Animal-Protein Meal					
	gm.	*gm.*	*gm.*	*gm.*	
Egg	54	5.1	5.5	0.3	77
Cheese (Velveeta)*	28	5.2	6.6	3.0	92
Butter*	2	—	1.6	—	14
Milk—evaporated*	49	3.4	3.9	4.8	68
Milk—high-protein, low-fat	244	10.3	2.4	16.6	129
Total		25.0	20.0	24.7	380
Plant-Protein Meal†					
Peanuts	15	4.0	6.6	3.5	89
Soybean flour	28	11.3	6.2	2.9	113
Sobee	30	9.7	5.7	11.1	135
Corn oil	2	—	2.0	—	18
Brown sugar	7.5	—	—	7.2	29
Cinnamon	¼ tsp.	—	—	—	—
Baking powder	½ tsp.	—	—	—	—
Water	60	—	—	—	—
Total		25.0	20.5	24.7	384

* The cheese, butter, and evaporated milk were added to the egg which was scrambled. The remaining milk was used as a beverage.

† The food items were combined into a cake. Water was used as a beverage.

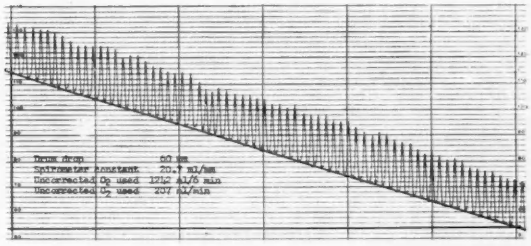

FIG. 1. *Record showing method of calculating amount of oxygen consumed per minute.*

Each sampling period lasted for 8 min. A sample record is shown in Figure 1.

The oxygen consumed during a sampling period was found by drawing a line of best fit along the bottom of the curve resulting from the removal of oxygen from the spirometer (*Fig.* 1). Although the sampling period lasted for approximately 8 min., the oxygen consumed for a 6-min. period was used as a basis for calculating consumption per minute. As is conventionally done, the drum drop which occurred during 6 min. of the sampling period was found, then multiplied by the spirometer constant (20.70 ml.), the result being the uncorrected oxygen used in 6 min. This value was corrected for standard tempera-

TABLE 3

Comparison of the mean changes in oxygen consumption above the basal level following consumption of meals of animal protein and plant protein

SAMPLING INTERVAL	MEAN INCREASE IN OXYGEN CONSUMPTION ABOVE BASAL LEVEL	STANDARD DEVIATION	t	SIGNIFICANCE LEVEL
	Animal-Protein Meal			
min.	*ml./min.*	*ml./min.*		*%*
60	18	4.98	2.70	2.0
120	25	3.87	6.33	0.1
150	22	3.93	5.63	0.1
180	23	2.78	6.18	0.1
210	18	3.84	4.54	0.1
240	17	2.66	6.39	0.1
270	16	3.21	4.98	0.1
	Plant-Protein Meal			
60	14	4.08	3.34	1.0
120	23	6.13	3.80	0.5
150	24	5.94	4.06	0.1
180	28	5.51	5.07	0.1
210	19	3.18	5.91	0.1
240	15	3.54	4.28	0.1
270	11	3.80	3.01	1.0

ture and pressure and expressed as oxygen used per minute.

DATA

The specific dynamic effects in terms of increased oxygen consumption above the basal level resulting from the animal and plant protein in the meal are shown for each sampling period in Table 3. In case of both animal and plant protein there was a significant increase in the demand for oxygen at each sampling interval over a period of 4½ hr.

The effects of the animal and plant protein in the meal on the total oxygen consumption per minute are compared at each sampling period in Table 4. There were no significant differences between the oxygen demand resulting from the protein of animal source and that resulting from protein of plant source at any sampling period.

SUMMARY AND CONCLUSIONS

Data were collected from fourteen normal female subjects between the ages of twenty and twenty-six years to show the comparative effects on specific dynamic action of protein from animal source with those of protein from plant sources.

On the basis of the data presented, the following conclusions were drawn:

(a) There is no significant difference at any sampling interval between the SDA resulting from the ingestion of either animal or plant protein.

(b) Both animal and plant protein caused a significant increase in the oxygen requirement of the group of subjects.

(c) The maximum increase in the oxygen requirement resulting from the ingestion of animal protein amounted to 14 per cent above basal requirements. In the case of the plant protein, the maximum increase in the oxygen requirement following its ingestion amounted to 16 per cent above basal requirements. These values were not significantly different.

TABLE 4

Comparison of the mean oxygen consumption after a meal of all-animal protein and after a meal of all-plant protein

SAMPLING INTERVAL	OXYGEN CONSUMPTION				STATISTICAL ANALYSIS	
	Animal-protein meal		Plant-protein meal		t	Significance level
	Mean	Standard deviation	Mean	Standard deviation		
	ml./min.	*ml./min.*	*ml./min.*	*ml./min.*		*%*
Basal	178	12.1	178	12.9	0	—
60 min.	196	16.6	192	17.8	0.61	58
120 min.	203	25.5	201	27.0	0.21	85
150 min.	200	19.4	202	26.2	0.23	83
180 min.	201	19.4	206	21.6	0.64	56
210 min.	196	20.7	197	17.7	0.14	90
240 min.	195	13.9	193	17.1	0.34	75
270 min.	194	19.1	189	14.3	0.80	47

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Appraisal of School Lunch Programs

III. Effect of Management Factors on Nutritive Value and Pupil Participation[1]

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PROJECTS conducted in Florida (1) and in Pennsylvania (2) have emphasized the importance of supervision of the school lunchroom by a person trained in nutrition and dietetics to assure the service of a lunch of high nutritive value. Clayton and Ullman (3) demonstrated that the nutritive value of the school lunch could be improved by better menu planning. Augustine and co-workers (4) found that lunches served to lower grade children during the early part of the lunch hour were nutritionally adequate. Later in the lunch hour, however, older children who presumably ate the same lunch were actually getting smaller and fewer portions of food, with the result that their lunches were inadequate for their greater needs. These reports have suggested the need for further studies of the relationship of factors in school lunchroom management to the nutritive value of the lunch.

Also, no reports of experimental studies of the effect of management factors on pupil participation in the school lunch were found in the literature. However, the authors believed, as a result of personal experiences, that pupil participation is affected by a number of factors, such as the kind of food served, the way it is prepared, the price children pay for the lunch, and the information and attitudes of children, teachers, and parents.

The purpose of the present experiment was to study the relationship of some of these management factors both to nutritive value and to pupil participation. The evaluation of management factors was accomplished by use of a score card on which individual items were rated on a scale of 1 to 5. Development of the score card has been reported (5). A second paper (6) described the cooperating schools, their management arrangements, and the educational programs for improvement of the management factors.

METHOD

Data for the present paper were collected in the lunchrooms of thirteen Ohio schools during two surveys previously described (6). These surveys preceded and followed training programs planned to improve practices and policies that were believed to be related to nutritive value and pupil participation. The general method for the surveys was similar to that used in studies by the staff of the Bureau of Human Nutrition and Home Economics as reported by Dreisbach and Handy (7).

The data used were obtained from observations and records of one day's activities in each school during each survey. They included: (a) amounts of foods used in the lunch; (b) enrollment and number of pupils eating in the lunchroom; and (c) scores for management factors evaluated from the observations.

Clarification of Terms

Type A Lunch. Calculation of food requirements and nutritive value of lunches served were based on the "Type A" lunch as served in the individual schools. As established by the Department of Agriculture, a Type A lunch should provide one-third to one-half of the pupil's daily food essentials and should include:

(a) One-half pt. whole milk (as a beverage)

(b) Two oz. meat, poultry, fish, or cheese . . . *or* one egg . . . *or* ½ c. dry peas, beans, or soybeans . . . *or* ¼ c. peanut butter

(c) Three-fourths c. vegetable and/or fruit

(d) One or more slices of bread, or muffin or other

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hot breads made of whole grain cereal or enriched flour

(e) Two tsp. butter or fortified margarine

All schools served only the one plate lunch,[3] and all intended that this lunch should follow the prescribed pattern for the Type A meal. However, the menu was planned and the amounts of food purchased according to the interpretation of this pattern by the person in charge and did not always meet the qualitative or quantitative requirements. "Type A lunch," as used in this connection, refers to the lunch actually served in the individual school, regardless of whether it met these requirements.

Number of Lunches. As used in the discussion of Type A requirements and nutritive value, the number of lunches is based on the number of schools rather than on the number of individual lunches in the schools.

Treatment of Data

The number of lunches meeting all requirements for the Type A lunch was computed by comparing the amount of each food used with the amount needed to satisfy the requirement for the number of individual lunches served. No computation was needed in the case of milk, since it was served in individual, ½-pt. containers to all children receiving the Type A lunch.

The average values of each Type A lunch for nine specific nutrients were calculated from the average amounts of food used per person served. Values from the Department of Agriculture's Handbook No. 8 (8) were used for most of these calculations with other tables (9–11) used as the source of data for a few foods not included there. These amounts were reduced to percentages of the Recommended Dietary Allowances for the ten- to twelve-year-old child (12).

Pupil participation in percentage for the day observed was computed by dividing the number of pupils served in the lunchroom by the enrollment on that day and multiplying by 100.

Method of Comparison

The results of the training experiment were studied by comparing data from the final survey with those from the initial survey. These comparisons included numbers of lunches meeting the requirements for the Type A lunch, numbers of lunches providing one-third or more of the Recommended Dietary Allowances for the ten- to twelve-year-old child[4] (12), median amounts of the nine nutrients provided by the lunches, and percentage of pupil participation.[5]

The relationships between scores of the various schools (a measure of the efficacy of the lunchroom management) and nutritive value were also studied to determine whether schools with high scores for management factors served lunches of higher nutritive value than those with low scores. This was accomplished by classifying the scores for All Items in each survey according to high (the upper seven) or low (the lower six), and nutritive values as median or above (the upper seven) and below median (the lower six). Scores and nutritive values were then cross-tabulated and the significance of the relationships in each survey was tested by chi square (13).[6]

RESULTS AND DISCUSSION

Food Requirements for the Type A Lunch

During the initial survey, three lunches met the five requirements for kind and amount of foods for the Type A pattern. During the educational programs considerable emphasis was placed on these requirements, and much help was given in planning the lunches and calculating the amounts of foods needed. At the time of the final survey, six lunches met all five requirements.

The requirements least often met in both surveys were for the protein-rich food, vegetable and/or fruit, and butter or fortified margarine. The requirements for bread and milk were met by all lunches. The requirement for protein-rich food was met by seven lunches in the initial survey and by nine in the final survey; that for vegetables and/or fruit, by eight lunches in the initial survey and by nine in the final survey. The requirement for butter or fortified margarine was met by eight lunches in each survey. Consideration of the twenty-six lunches as a group and comparison with the findings of Dreisbach and Handy (7) show similar findings for protein-rich foods and table fat, but a larger proportion of schools in this study failed to provide the recommended amounts of vegetable and/or fruit.

Nutritive Value of Lunches

Individual Lunches. The nutritive value of the twenty-six lunches served was evaluated for adequacy by comparison of the calculated values for nine nutrients with one-third of the Recommended Dietary Allowances for the ten- to twelve-year-old child (12).

During the initial survey, two lunches supplied all nine nutrients in the amounts required by this standard, while one lunch supplied all of them during

[3] A few pupils in some schools purchased lunches without milk. These were not included in the calculations of food value of Type A lunches, although these pupils were counted as participating in the lunch.

[4] This standard was used by Dreisbach and Handy (7).

[5] Comparisons of the scores for management factors were made in the second paper of this series (6).

[6] The methods used in statistical analysis of the data were suggested by D. R. Whitney, Director, Statistical Laboratory, The Ohio State University, and calculations were checked in that Laboratory.

TABLE 1

Number of lunches providing one-third of the Recommended Dietary Allowances for the ten- to twelve-year-old child in initial and final surveys

NUTRIENT	NUMBER OF LUNCHES MEETING STANDARD	
	Initial survey	Final survey
Energy	9	7
Protein	12	11
Calcium	10	9
Iron	6	10
Vitamin A	10	9
Thiamine	6	9
Riboflavin	12	13
Niacin	10	6
Ascorbic acid	6	7

the final survey (Table 1). Since there was no evidence from the two surveys of improvement in nutritive value during the year, the following analysis includes all twenty-six lunches served during both surveys.

Riboflavin was supplied in adequate amounts by twenty-five of the twenty-six lunches, falling slightly below the recommended amount in one lunch. The large proportion of lunches supplying the allowance for this nutrient corresponds with the findings of Dreisbach and Handy (7) and, as in that study, was due to the ½ pt. milk included in all Type A lunches.

The recommended amount of protein was supplied in twenty-three of the twenty-six lunches even though only sixteen lunches met the requirements of the Type A lunch for protein-rich food. In three cases, protein was marginal (29, 30, and 31 per cent) as compared to the standard. However, each of the lunches included some protein-rich food along with ½ pt. milk and one or more slices of bread. Refined cereal products, such as macaroni, spaghetti, and noodles, also contributed to the total protein, and some protein was supplied by additional milk used in main dishes and desserts. Neither the cereal nor the extra milk satisfied the requirement of the Type A lunch for protein-rich food, although important contributions of protein came from these sources.

Allowances for food energy, iron, thiamine, niacin, and ascorbic acid were least often supplied (*Fig. 1*). The low caloric values in ten of the lunches were due to insufficient amounts of food and were accompanied by other inadequacies. Five of these ten lunches were inadequate also in iron, six in thiamine, seven in niacin, and six in ascorbic acid.

Comparison of Initial and Final Figures. The median amounts of the nine nutrients in the lunches served during the final survey were compared with those in the lunches served during the initial survey (Table 2). The median represents the amount of the nutrients supplied by seven of the thirteen lunches

TABLE 2

Median amounts of nutrients supplied by lunches in initial and final surveys

NUTRIENT	ONE-THIRD OF RECOMMENDED DIETARY ALLOWANCE	MEDIAN AMOUNT	
		Initial survey	Final survey
Energy (calories)	833	833	820
Protein (gm.)	27	27	28
Calcium (gm.)	0.4	0.447	0.46
Iron (mg.)	0.4	3.9	4.9
Vitamin A value (I.U.)	1500	2017	2389
Thiamine (mg.)	0.4	0.39	0.48
Riboflavin (mg.)	0.6	0.73	0.81
Niacin (mg.)	4	4.8	3.8
Ascorbic acid (mg.)	25	23	25

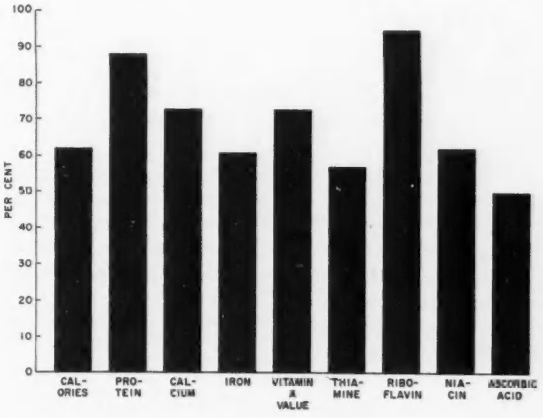

FIG. 1. *Percentage of twenty-six lunches which supplied recommended amounts of nutrients.*

in each survey. This comparison shows that the median amounts of most nutrients provided by the lunches served during the final survey were greater than at the time of the initial survey.

These median amounts were also compared with the standard used in evaluating the nutritional adequacy of the lunches, i.e., one-third of the daily allowances for the ten- to twelve-year-old child (Table 2). In each survey at least half of the lunches met the standard for each of the nine nutrients.

Statistical Analysis. The chi square test for relationships between scores of individual schools and nutritive value indicated that improvement in management factors, as shown by increasing scores, was accompanied by an improvement in the nutritive value of the lunches (Table 3).

Pupil Participation

The number of pupils enrolled in the schools and the participation, percentage-wise, are shown in Table 4. Although there was a slight decrease in participation, analysis of the differences by the "t"

TABLE 3

Number of times median-or-above and below-median amounts of nutrients occurred in schools with high and low scores during initial and final surveys

NUTRITIVE VALUE	NUMBER OF TIMES AMOUNT OF NUTRIENTS OCCURRED	
	High score schools	Low score schools
Initial Survey†		
Median or above	36	31
Below median	27	23
Final Survey**		
Median or above	43	22
Below median	20	32

† Chi square = 0.0141; not significant.
** Chi square = 8.9152; significant at the 1 per cent level.

test (13) showed that it was not statistically significant. As the school administrators considered lower participation in the spring than in the fall a normal occurrence, the decrease during the same period for the previous year was determined as a basis for comparison. It was found that the drop in participation during that year was statistically significant. The higher participation maintained during the year of the study may have been influenced by the improvement in the lunches and the greater emphasis on the school lunch during the year.

There was evidence that other factors affected participation. In one school, participation increased about 13 per cent after replacement of a cook who was disliked by the children and who served poorly cooked food. A unique rule in one school caused considerable variation in day-to-day participation. The menu was posted a day ahead, and the children were requested to bring their own lunches from home if they did not like the menu for that day.

The price charged is also believed to be a factor in determining participation (7), but little opportunity was afforded for studying the effect of this factor in the present study because most of the schools charged the same amount. Some evidence may be found from observation of School 2, where participation (Table 4) dropped almost 50 per cent when the price was raised from 20 cents to 25 cents soon after the initial survey. However, at the time of the final survey, it had again increased so it appears that the first sharp decrease may not have been due solely to the increased cost, and some other factor or factors may have been at work.

SUMMARY

A study was conducted in thirteen Ohio schools to determine the effect of certain management factors on nutritive value and pupil participation in the school lunch. Results reported are based on the comparison of data from observations made during two surveys. These data included the amounts of foods served, nutritive values, pupil participation, and scores from evaluation of management factors.

During the initial survey each lunch program was scored by means of an objective rating scale, and information was obtained for calculation of nutritive value and pupil participation in percentage. In-service training by group meetings and visits to individual schools were conducted to improve the practices on which scores were low. A final survey provided information on changes which had occurred.

The number of schools meeting all of the food requirements for the Type A lunch increased from three in the initial survey to six in the final survey. Some improvements occurred in nutritive value of the lunches, as shown by the amounts of nutrients provided. The need for further improvement is indicated by the small number of lunches which met the nutritional standard used for evaluation.

Increases in scores for management factors were accompanied by some improvements in nutritive value. There appeared to be some relationship between scores and nutritive value of the lunches. The seasonal decrease in pupil participation between autumn and spring was less in the thirteen schools during the year of the study than during the previous year.

TABLE 4

Number enrolled, percentage of participation, and price paid by pupils for lunch

SCHOOL	INITIAL SURVEY			FINAL SURVEY		
	Number enrolled	Participation	Price paid by pupils	Number enrolled	Participation	Price paid by pupils
		%	¢		%	¢
1	241	71	20	227	60	20
2	80	98	20	76	88	25
3	132	71	20	128	81	20
4	335	59	20	316	58	20
5	50	81	20	54	74	20
6	131	76	20	132	90	20
7	471	49	25	455	38	25
8	88	82	20	79	75	20
9	93	58	20	88	72	20
10	143	78	20	151	66	20
11	35	66	20	33	64	20
12	196	80	20	186	57	20
13	229	73	21	230	73	21

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Ellen H. Richards—December 3, 1842–March 30, 1911

The history of nutrition has frequently been influenced by those whose contributions have been indirect. Some have contributed to advancement in fields related to nutrition, such as developing new techniques, methods of measurement, or apparatus without which progress in the science of nutrition could not have proceeded. Others have opened pathways for new study or have overcome group prejudices. This latter has been one area of progress in which Ellen H. Richards must be recognized. By entering the field of chemistry and demanding advanced training, Mrs. Richards opened the doors of Massachusetts Institute of Technology to women and, by the founding of the American Home Economics Association (1908), she helped to make possible the many contributions by women to the fields of nutritive values of food, dietary studies, and human metabolism experiments.

Ellen Henrietta Swallow was born December 3, 1842 in New Ipswich, New Hampshire, the only child of Peter Swallow and Fanny Gould Taylor. Her early education was at home, and practical knowledge was gained by assisting her father in his general store. From Westford Academy she eventually went to Vassar (1868), and after graduation, two years later, was permitted to enter Massachusetts Institute of Technology as a special student in chemistry. She became a specialist in water analysis and later established a private practice in sanitary chemistry, analyzing not only water, but also food, wallpaper, and fabrics.

In 1875 she married Professor Robert H. Richards, Head of the Mining Engineering Department at Massachusetts Institute of Technology. Mrs. Richards' life demonstrated clearly what a woman could do in science, in homemaking, and in service to others. She was not physically strong, but her alert, keen mind, her scientific training, her organizing ability, and her interest in education and in homemaking as a science led her to the forefront in many movements. She taught in college, was active in the early work of teaching by correspondence, lectured in public, traveled widely, aided in the establishment of school lunches in Boston, and was a consultant on food for institution feeding.

Through the Rumford Kitchen at the World's Fair in Chicago she presented the first attempt to demonstrate simply the scientific facts underlying nutrition. This was followed by association with the U. S. Department of Agriculture and the writing of bulletins on the nutritive value of food. She knew how to make every minute count so that although she wrote many articles and ten books, she always had time for home and friends and to be interested in everything that would contribute to women's education. At sixty-five she was still active and lecturing on science. She died March 30, 1911 after a week's illness.

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—Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.

Subjects' Estimation of Food Intake and Calculated Nutritive Value of the Diet[1]

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YOUNG *et al.* (1) have previously reported on the ability of several types of subjects to estimate accurately the size of food portions eaten. This report was one of a series growing out of the Northeastern Regional Research Project NE-4 on nutritional status and is concerned with the sources of possible errors in dietary studies. It is recognized that one great source of error might be eliminated if all dietary studies could be on a weighed basis. However, in many investigations, weighing food samples is neither possible nor even desirable. Many feel that a more accurate picture of usual dietary intake is obtained if the subject estimates his intake in terms of servings or household portions, actually measuring portions wherever possible. However, such estimation introduces an error of unknown quantity; it may be large or small, depending on the subject's ability to estimate portions accurately. Also, his ability may be affected by the degree of interest he has in recording and the care he takes in doing it. From the reported study (1), it would appear that errors in estimation of portions are probably the largest source of error in keeping dietary records. At that writing, it was pointed out that one exceedingly important practical question was not answered, namely: What influences do the differences in portion estimation have on the calculated nutritive value of the intake? For some types of food, large differences between estimated and measured or actual portions would have relatively little effect on calculated nutritive value of the intake; for others, relatively small errors in estimation would greatly affect the calculated nutritive value.

The present study was undertaken to investigate the effect that the subjects' errors of estimation and omission in reporting food portions have on the nutritive value of the diet calculated for the individual and for the average intake of the group.

Meredith *et al.* (2) compared the record of the actual food consumption and the record of consumption by recall for ninety-four boys and girls, nine to eighteen years of age, for one school lunch. Although there was considerable lack of agreement by comparison of the items recorded, the differences were relatively small as reflected in the calculated analyses. On a *group* basis, errors of estimation cancelled out in such a way that they did not seriously interfere with obtaining reasonable values of the average nutrient intake. However, these investigators reported that errors might be of a significant nature if one were primarily interested in the nutrient intake of an *individual*.

Chamberlain and Pyke (3), working with freshmen university women in England, found that the average nutritive value of the diet of the *group* was in close agreement when obtained by weighing and by estimated records kept by the individuals. However, the intakes of *individuals* showed considerable variation when obtained by weighing as compared to those obtained from estimated records kept by the individuals.

METHODS

Ideally, several conditions should be fulfilled if one wishes to study accurately the effect of the subject's estimation of food intake on the calculated nutritive

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value of the diet. The group should be representative of the population from which the dietary studies are drawn. It would be imperative that the subjects be entirely unaware that their food and their uneaten portions have been measured and that their dietary intake has been checked. Furthermore, it would be necessary to observe every meal being recorded for the period under study if one were to obtain a real appraisal.

Collection of Data

In this study, difficulties in following the ideal procedure were insurmountable. Furthermore, in collecting data, it was impossible to follow a consistent or identical routine since the subjects at the six cooperating experiment stations varied in age and environment. It is recognized that there were real limitations to the procedures which had to be used in some instances and that the conditions in certain cases were not identical with those under which the original dietary data were collected (4). Be that as it may, it was thought better to obtain some idea of the effect of subjects' estimations on the calculated nutritive value of the intake both on a group basis and on an individual basis than to ignore this source of variation entirely. Described below, by state, are the methods used in collecting data.

At the *Maine* Experiment Station, 25 eighth and ninth grade children (11 boys and 14 girls) were observed at school lunch on three consecutive days. Uniform servings were measured before being served, and each child recorded the kind and amount eaten. Since supervisors were on hand to observe unused food, the children knew they were being watched. If a child neglected to record some food consumed, he was questioned about it; thus there were no omissions. The three lunches were calculated as a composite.

At the *Massachusetts* Station, 17 pregnant homemakers were studied. They were presented separately with three specially prepared trays which contained measured amounts of foods representative of different meals. They were asked to estimate the quantity of food on each tray and to record it. The women were aware of the intent of the study. Although under ordinary circumstances, estimation of food when the subject realizes he is being watched may be more accurate than otherwise, the reverse may have been true for these women. For the original dietary records, the housewives had measured food and had become quite efficient at estimating amounts they had been eating. Thus the experimental procedure would in no way estimate the accuracy of the seven-day records obtained from these women (5). Rather, it would indicate their ability to estimate after a considerable lapse of time from the taking of the original records.

In *New Jersey*, data from 56 male industrial workers were used. As part of the original survey, industrial workers were asked to keep seven-day records, many of which included lunch at the plant cafeteria. Since the size of servings from the cafeteria had been measured and recorded, data from these original records were available. Although data from only one meal, a lunch, were available by this method, they *do* represent the conditions under which the original seven-day records were taken. On the other hand, there was no way of indicating how much food was left on the dishes or of knowing when the worker failed to report everything he had eaten. However, it had been a common observation that workers ate everything on their plates. Comparisons were made only on the basis of measured food items and did not include number items such as bread and butter, cups of beverage, and so on. The subjects were completely unaware that they were being checked.

At the *New York* Experiment Station, 16 children (11 boys and 5 girls) twelve to fourteen years of age, were observed for one school lunch. The amount of food served was estimated by three advisers from the home economics department. The child's estimation was obtained by questioning and recall directly after the meal. Until that time the children did not know they were being observed. The circumstances here were not comparable to the record made by the child at the time of eating, the method used in the original dietary studies (4).

At the *Rhode Island* Station, 14 representative college girls who were included in the original survey were studied for one day during which they recorded their food intake at the college cafeteria. Measured quantities of food were served, and any unused food left on trays was observed. The subjects were completely unaware of the intent of the experiment or that they were being observed.

In *West Virginia*, 21 college students (13 men and 8 women) in the Infirmary were observed for one full day of meals, including breakfast, lunch, and dinner. The students were asked to record their food intake. The food served was accurately measured and unused portions subtracted. The subjects did not know the intent of the experiment or that their eating habits were being observed. It was felt that the subjects may be considered as representative of West Virginia college students as a whole, although it would not be possible to compare these results directly with the original seven-day records obtained previously from college students in West Virginia (5).

Calculation of Data

All dietary data were calculated in terms of calories, protein, calcium, phosphorus, iron, vitamin A value, thiamine, riboflavin, niacin, and ascorbic acid. A simplified method of dietary calculation developed by Babcock of the New Jersey Agricultural Experiment Station was followed (6).

Comparison of "Actual" and Estimated Intake

The calculated nutritive value of the "actual" or measured food intake was compared with that of the subject's estimation of intake by state on both a group and an individual basis. On the group basis, by state, the mean nutritive values calculated from the measured intakes and from the subjects' estimates were compared.

On an individual basis, by state, the calculations of the nutritive value of the measured intake of each subject and of his estimations were compared. For each state, by nutrient, the percentage of subjects whose estimates of intakes fell within 10 per cent and within 20 per cent respectively of their measured intakes was determined. For each state, the maximum range of deviation in nutritive value calculated from estimated and measured intake was determined. Also, the percentage of subjects who overestimated and underestimated intake was examined.

RESULTS AND DISCUSSION

On Group Basis

In Table 1 are presented on a group basis, by state, the calculated nutritive values of the estimated and of the measured or actual food intake. In calculating the mean nutritive intake of a group, the subjects' errors in estimation seemed to have relatively little effect for any of the age or occupational groups, except for the New York school children. The agreement between estimated and measured values for the Maine school children and for the Massachusetts pregnant women was amazing. For New Jersey, in all probability the agreement would have been closer if the more easily estimated number items (such as slices of bread, half pints of milk, and so on) had also been included. For the comparison made for New Jersey for one nutrient—vitamin A—there was an overestimation in excess of 20 per cent. In the case of New York, where the greatest differences existed, in all but two nutrients—calories and vitamin A—there was an overestimation of slightly more than 20 per cent. Here it must be remembered that the comparison was between the actual and the child's recall of what he had for lunch and that he had been completely unaware that he was being observed or would be asked to recall his intake. In Maine, with the same age group where three lunches were used and a record was made, the agreement was much better. It cannot be estimated how much the factor of awareness of being observed contributed to the accuracy with which these children kept their records.

In the Maine, New York, and West Virginia studies, both males and females were included. Though the numbers dealt with were small, it was of interest to see whether there were sex differences in the ability to estimate. There was no consistent trend, although with the younger children, one could say in general that the boys tended to overestimate. For the eighth and ninth graders in Maine, the boys, as a group, tended to overestimate and the girls to underestimate. In general, the boys did not overestimate quite as much as the girls underestimated. However, among the New York school children, a different situation existed for the same age groups; the girls estimated extremely well, while the boys overestimated by approximately one-third for every nutrient. For the West Virginia college students, both the men and women seemed to estimate equally well. The greatest deviations were in protein, iron, and niacin which might suggest difficulties in estimating sizes of meat portions.

TABLE 1

Comparison on a group basis of calculated nutritive values of estimated and measured food intake

STATE	TYPE OF RECORD	ENERGY	PROTEIN	CALCIUM	PHOSPHORUS	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
		calories	*gm.*	*mg.*	*mg.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Maine	Measured	1,930	77.4	1,320	1,509	10.6	6,198	1.16	2.38	10.8	77
	Estimated	1,930	74.8	1,316	1,439	10.1	5,808	1.08	2.23	9.8	66
Massachusetts	Measured	2,727	101.9	1,782	2,168	14.2	5,415	1.95	3.08	16.4	133
	Estimated	2,791	99.6	1,796	2,182	15.1	5,148	2.04	3.00	16.7	121
New Jersey	Measured	400	20.2	190	267	3.7	1,777	0.39	0.39	4.3	14
	Estimated	438	22.4	166	306	4.2	2,415	0.38	0.41	4.3	17
New York	Measured	1,269	36.6	869	771	2.8	1,925	0.31	0.96	2.3	9
	Estimated	1,518	44.7	1,074	950	3.4	2,229	0.38	1.25	2.8	11
Rhode Island	Measured	1,670	56.7	900	1,082	8.1	5,801	0.75	1.74	7.7	112
	Estimated	1,411	52.4	759	956	6.6	6,205	0.86	1.46	9.0	114
West Virginia	Measured	2,328	73.5	1,230	1,450	12.0	12,778	1.6	2.1	11.5	192
	Estimated	2,353	82.4	1,245	1,550	14.0	11,814	1.5	2.3	13.0	187

Evidence presented in this study gives further support to previous conclusions (1) that for studies of the average dietary intake of a group, the simplest possible techniques seem justified. On a group basis, when food intake is computed into calculated nutritive values, the subjects' errors in estimation of food portions seem to contribute relatively little as a source of error. On a group basis, nutritive values calculated from estimated and measured food intakes showed relatively small and inconsistent differences in most cases studied.

On Individual Basis

Table 2 presents, on an individual basis, a comparison of the nutritive values calculated from estimated intakes and from measured or actual intakes. The comparison is given in terms of the percentage of subjects whose estimates gave nutritive values within 10 and within 20 per cent of those of the measured intake. A tabulation is also given for each state, by nutrient, of the percentage of subjects whose estimations resulted in over- and underevaluations of nutritive values calculated from measured intake.

The Maine children had the closest estimations. More than half estimated their intake in such a way that the calculation was within 10 per cent of that of the measured or actual intake; for most nutrients, estimates of nine-tenths of the subjects were within 20 per cent.

The pregnant women from Massachusetts did the

TABLE 2

Comparison on an individual basis of calculated nutritive values of estimated intakes with those of measured intakes

DEVIATION IN NUTRITIVE VALUE OF ESTIMATED INTAKE FROM MEASURED INTAKE	PERCENTAGE OF SUBJECTS										
	Calories	Protein	Calcium	Phosphorus	Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic Acid	Average
Maine—8th and 9th Grade Children											
Within 10%	44	64	56	64	56	60	64	64	52	52	58
Within 20%	92	92	88	88	84	80	92	84	84	64	85
Underestimation	44	44	48	52	48	60	64	56	88	88	59
Overestimation	56	52*	52	48	52	32*	32*	40*	12	12	39*
Massachusetts—Pregnant Women											
Within 10%	59	53	59	65	41	29	29	47	35	35	45
Within 20%	71	82	82	76	53	65	71	82	65	71	72
Underestimation	47	53	53	53	47	65	53	59	41	59	53
Overestimation	53	47	47	47	53	35	41*	41	59	35*	46*
New Jersey—Industrial Men											
Within 10%	54	50	38	38	38	50	50	48	55	52	47
Within 20%	80	70	52	71	66	59	63	66	66	61	65
Underestimation	23	23	21	21	23	14	30	21	23	18	22
Overestimation	59*	61*	61*	63*	57*	46*	36*	46*	41*	34*	50*
New York—8th and 9th Grade Children											
Within 10%	25	13	19	19	25	13	25	13	19	19	19
Within 20%	44	25	25	31	44	31	44	38	44	44	37
Underestimation	31	31	38	31	38	31	25	31	31	19	31
Overestimation	63*	63*	63	63*	63	63*	69*	69	63*	63*	64*
Rhode Island—College Women											
Within 10%	36	57	57	57	29	29	50	21	36	57	43
Within 20%	64	79	57	57	50	57	86	57	79	79	67
Underestimation	100	86*	71	93	93	50	64	71	71	64	76
Overestimation	—	—	21*	7	7	50	29*	29	29	36	21*
West Virginia—College Students											
Within 10%	43	33	57	48	33	5	52	62	14	33	38
Within 20%	71	52	86	71	62	24	76	76	52	43	61
Underestimation	43	24	38	29	33	52	52	19	29	43	36
Overestimation	57	76	57*	71	62*	48	43*	81	71	57	62*

* In certain cases, subjects estimated exactly; therefore, figures do not total 100%.

next best job of estimation, followed closely by the New Jersey male industrial workers and the Rhode Island and West Virginia college students. The school children in New York made the poorest showings. Except for the New York school children who estimated by recall, approximately two-thirds or more of the subjects estimated their food intake in such a manner that the calculated nutritive value was within 20 per cent of the value of the measured intake. Except for Maine, the estimations were within 10 per cent for less than one-half of the individuals. It is possible that the estimations of the New Jersey men might have agreed more closely with the actual values if number items had been included.

It may be of significance that the best estimations (for Maine and Massachusetts) were made by subjects who were aware that they were being observed.

In the previous report concerning the subjects' ability to estimate portions (1), it was stated that subjects noticeably tended to overestimate food servings, a bias partially compensated for by their failure to report some of the foods eaten or amounts left on plates. It was interesting to see how this affected nutritive value. Were values calculated from estimations higher than those calculated from the measured intake? For only one group—Rhode Island college students—were there pronounced underestimations; for practically every nutrient, the error of by far the greater majority of subjects was an overestimation. On the average, more Maine children underestimated than overestimated, but this varied with the nutrient. For most nutrients, a higher percentage of the New Jersey industrial workers estimated exactly than did subjects in other states. The majority of the New York school children and the West Virginia college students were more apt to overestimate than to underestimate.

The greatest ranges of deviations (+ or −) of the nutritive value from the measured intakes were found in the New York school children's recalls and in the recorded estimations of the New Jersey workers and the West Virginia college students. Deviations of the smallest magnitude were found for the Maine children, the Massachusetts women, and the Rhode Island college students. No nutrient or nutrients could be singled out for all states as being estimated most poorly.

From these surveys, it would seem apparent that in studying the nutrient intake of an individual, the subject's ability to estimate the food portions may be a large source of error. The need for every effort to obtain precise information is obvious. In the absence of a weighed record, measurement of intake in household units would seem to be the next most desirable procedure. Also, indications are that it would be wise to check subjects' estimations periodically and to let them know they are being checked.

SUMMARY

A study was made in six northeastern states of the ability of subjects of different ages and occupational groups to estimate their food intake. Subjects included grade school children, college students, pregnant women, and male industrial workers.

A comparison of the nutritive value of the food intake, calculated from estimates by the subjects and from measured portions, both in terms of average nutrient intake of a group and of the individual, is reported.

Under conditions of these studies, in figuring the mean nutritive intake of a group, the subjects' errors in estimating food eaten seemed to have relatively little effect on the calculated nutritive value in any of the age or occupational groups studied, with the possible exception of the New York school children. On a group basis, calculated nutritive values of estimated and measured food intakes showed relatively small and inconsistent differences in most cases.

On an individual basis, considerably greater variation was found between the nutritive values calculated from the estimated and from the measured food intakes. In only one state did the estimations of half of the individuals yield calculated nutritive values within 10 per cent of those of the measured values. However, approximately two-thirds of the subjects estimated their food intake in such a manner that the calculated nutritive value was within 20 per cent of that of the measured intake.

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Eat to your desirable weight after you have eaten what you should.—*F. J. Stare in Am. J. Pub. Health 37: 515, 1947.*

Home-Freezing vs. Home-Canning of Peas

Palatability, Ascorbic Acid, Total Solids, and Color[1]

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THIS study was undertaken to answer a question frequently asked by homemakers: "Should I freeze peas or can them?" The object of the study was to determine relative merits of steam and boiling-water blanching prior to freezing, and of hot- and cold-packs in canning.

Commercial brands of high grade frozen and canned peas were used as controls.

REVIEW OF LITERATURE

Home-frozen peas blanched in boiling water for 1 min. have been reported to retain more flavor and ascorbic acid during storage than those steam-blanched for 1½, 2½, or 3½ min. (1).

Most of the reports on canned peas have been for commercially canned vegetables (2–4). No studies were found dealing with cold-pack canned peas or comparing home-frozen and canned peas.

The only comparisons of hot-pack and cold-pack canning were on snap beans and tomatoes. A 15 to 20 per cent higher ascorbic acid retention was reported in beans packed raw than in those preheated 5 min. Higher palatability scores have been reported for raw-pack beans (5) and tomatoes (6, 7) than for hot-pack.

EXPERIMENTAL PROCEDURE

The peas used in this study were the Greater Progress variety. They were hand-picked, machine-shelled, and processed within 4 or 5 hr. Preliminary studies showed no significant difference in palatability scores or in the ascorbic acid content of peas shelled by machine and by hand.

Processing Methods

Each of the four methods of home-processing was used on one day to minimize sampling errors. Both canned and frozen peas were packed in 1-pt. glass freezer-jars.

Freezing Procedures. Peas to be frozen were blanched in 540-gm. lots. Lots of 260 gm. of the blanched and chilled peas were placed in each jar.

In *water-blanching*, the 540 gm. peas were immersed in 2 gal. boiling water in a pressure cooker. The blanching period was 2 min., which included 1 min. actual boiling. Cooling was in ice water for 1 min.

Steam-blanching and *cooling* in partial vacuum were done in a blancher consisting of a pressure saucepan with special basket and attachments. The basket of peas and the cover were put in position after ¾ c. water was brought to a boil. At the end of a 2-min. blanching, a pressure gauge was placed over the cover vent, and the pan was set in ice water for 6 min. In cooling, a vacuum pressure of 29 in. was reached in 3 min., but 6 min. of cooling were necessary to cool the peas to 21°C. (70°F.). In this method the peas suffered a minimum exposure to air.

The adequacy of blanching was determined by Thompson's catalase method (8).

Canning Procedures. Lots of 250 gm. peas and 150 gm. water were placed in each jar in both canning methods.

Peas for the *hot-pack* had been preheated for 7 min. in 540-gm. lots in approximately 2 qt. boiling water. In the *cold-pack*, the raw peas were placed in the jar and boiling water poured over them. Processing was in a pressure cooker at 10 lb. pressure for 35 min. This time was kept constant, although the hot-pack may not have required this long a period.

Storing. Canned peas were stored at room temperature, 70° to 74°F., and the frozen peas were stored in a home freezer at −10°F. for approximately six months.

Cooking and Reheating Methods

After storage, the contents of two duplicate jars of peas, either frozen or canned, were thoroughly

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mixed, and all samples for cooking and for analyses were taken from these mixtures.

Both the frozen and the canned peas were prepared for serving in 300-gm. lots in a covered, heavy, 2-qt. aluminum pan. Each cooking study was repeated ten times.

Frozen Peas. The frozen peas were allowed to stand in sealed jars at room temperature for approximately 1 hr., then cooked in 60 gm. boiling water. At the end of 1 min., the cover was removed and the frozen lumps broken with a fork. After an additional 1½ min., when the peas had reached a full boil, the heat was reduced and the peas boiled gently for 1 min.

Canned Peas. Lots of 300 gm. peas and 150 gm. canning liquor were heated to boiling; this required 3 min.

Determinations

The cooked frozen and the reheated canned peas were drained in an enamel colander for 30 seconds, weights of peas and of liquor were recorded, and samples were weighed out for analysis.

Determinations were made of ascorbic acid, total solids, and color for: raw peas, peas after blanching and cooling, and peas after processing and storage.

In addition, palatability tests were made on the cooked frozen peas and the reheated canned peas. A panel of five judges determined palatability scores for: aroma, flavor, color, texture of skins, and cotyledons.

Ascorbic acid was determined by the indophenol-xylene extraction method of Nelson and Somers (9) on duplicate 10-gm. samples.

Total solids were determined by the method of Mahoney *et al.* (10) on duplicate 10-gm. samples.

Color was determined with the Hunter Color-Difference Meter. Color plate number 632, known as kitchen green, was used as a standard. Readings were made on 80-gm. samples in a Plexiglass cup.

The data were analyzed by Student's "t" test (11).

RESULTS AND DISCUSSION

Palatability

Table 1 presents data on palatability scores for the various quality factors and types of processing.

In general, lower scores were given to the canned peas than to the frozen. No quality factor was scored as high as "very good" for the canned peas.

Steam-blanched, partially vacuum-cooled frozen peas were first choice of the judges nearly twice as often as were commercially frozen, and the commercial brand nearly twice as often as the water-blanched, frozen peas. The commercially frozen peas were of high quality, in a preliminary study having been rated higher in palatability and ascorbic acid than two other brands tested.

Frozen, steam-blanched peas received a slightly higher average score for all factors than did the water-blanched; none of the frozen samples, however, were rated below "average" on any factor. Color received higher scores than any other factor, averaging just below "excellent."

Of the canned samples, scores for both types of home-canning were approximately the same for all factors. However, the commercially canned peas, which were obviously of a larger, firmer variety and more mature, scored higher in color and texture (the skins did not shrink so much). Although for individual factors, the commercial brand scored as high or higher than the two home-canned packs, on over-all performance it was listed last. Varieties of

TABLE 1

*Palatability scores of frozen and canned peas**

PROCESSING METHOD	PALATABILITY SCORES								ORDER OF PREFERENCE
	Aroma	Color in reference to		Flavor		Texture			
		Canned or frozen peas	Fresh peas	Over-all	Sweetness	Skins		Cotyledons	
						Tenderness	Shrinkage		
Frozen Peas									
Steam-blanching	3.0	3.7	3.8	3.3	3.3	3.0	2.9	3.4	1
Water-blanching	2.8	3.5	3.7	2.8	2.8	2.8	3.0	3.1	3
Commercial freezing	2.9	3.7	3.7	3.1	3.1	2.6	2.7	2.8	2
Canned Peas									
Cold-pack	2.5	2.5	1.4	2.1	2.3	2.5	2.5	2.2	4
Hot-pack	2.5	2.4	1.4	2.2	2.3	2.6	2.5	2.1	5
Commercial canning	2.6	2.8	1.6	2.2	2.3	2.8	2.9	2.3	6

* Average for 5 judges for 10 replicates. Rating scales used: 5, perfect; 4, excellent; 3, very good; 2.5, average; 2, good; 1, poor; and 0, unacceptable.

peas grown for commercial canning tend to be starchy, hard, and lacking in flavor and, therefore, are usually not acceptable when cooked fresh or frozen.

On over-all preference, the cold-pack peas were most preferable of the canned samples, followed by the hot-pack and the commercial brand. A wider variation in personal preference was shown in rating the canned peas than frozen. Although the commercial brand had more first choices, it also elicited more last choices.

Ascorbic Acid

Data on average ascorbic acid content and average retention are given in Table 2.

The ascorbic acid content of the raw peas ranged from 36.6 to 44.5 mg. per 100 gm.

Steam-blanching and partial vacuum-cooling prior to freezing resulted in a higher retention of ascorbic acid than did water-blanching and chilling. This difference was statistically highly significant (Table 3). After freezer storage, only small differences were found in ascorbic acid content in the three lots. However, percentage retention in steam-blanched peas was significantly higher than in the water-blanched.

Cooking of the frozen peas resulted in small losses of the ascorbic acid present immediately prior to cooking. Retentions in the drained peas were: steam-blanched, 84 per cent; commercially frozen, 78 per cent; and water-blanched, 75 per cent. Some vitamins were present in the cooking liquor.

In canning, the cold-pack peas retained the most ascorbic acid. During blanching prior to hot-pack canning, 43 per cent of the ascorbic acid was lost. After storage, drained cold-pack peas were highest of the canned samples in ascorbic acid; hot-pack, next; and the commercial brand, last. After reheating, cold-pack peas contained significantly more ascorbic acid than either the hot-pack or commercial brand. Differences between the hot-pack and commercial brand were also significant.

In comparing freezing and canning, data indicated that freezing was to be preferred. A highly significant difference was found in ascorbic acid retentions between steam-blanched frozen peas and both hot- and cold-pack canned peas. There was, in addition, a highly significant difference in favor of water-blanched, frozen peas over hot-pack canned peas, although the difference in retention with respect to cold-pack peas was not significant.

Appreciable amounts of ascorbic acid were found in the cooking liquor of the peas: less than one-fourth of that in the frozen peas and over one-third of that in the canned peas. This indicated the desirability of: (a) cooking frozen peas in a small enough amount of water so that it can be used, (b) canning peas in a full pack, and (c) in both instances, using the liquor.

TABLE 2

Average ascorbic acid retention of frozen and canned peas processed by different methods

PROCESSING METHOD	ASCORBIC ACID							
	Raw	Blanched or chilled		After storage		After cooking		
						Drained peas		Liquor
		Content	Retention*	Content	Retention*	Content	Retention*	Content¶
Frozen Peas								
	mg./100 gm.	*mg./100 gm.*	*%*	*mg./100 gm.*	*%*	*mg./100 gm.*	*%*	*mg./100 gm.*
Home-frozen†								
Water-blanching	42.3	26.3	60	25.2‡	58	23.6	43	20.0
Steam-blanching	40.2	31.5	78	28.4‡	70	27.0	60	21.1
Commercially frozen #	—	—	—	23.0‡	—	21.5	—	15.6
Canned Peas								
Home-canned†								
Cold-pack	40.6	—	—	23.3**	58	21.6	50	22.8
Hot-pack	38.5	25.3	57	15.3**	36	13.2	29	15.4
Commercially canned #	—	—	—	11.2**	—	9.5	—	11.5

* Calculated on basis of original content. In calculating retention, the amount of ascorbic acid in the total weights of the raw peas, the chilled-blanched peas, and the cooked peas in each lot was used.

† 7 replicates.

‡ Frozen, peas plus adhering frost.

5 replicates.

¶ On basis of 100 gm. liquor, not on total amount of liquor present.

** Canned, drained peas.

TABLE 3

Mathematical significance of data on total solids and ascorbic acid†

COMPARISONS	TOTAL SOLIDS AFTER COOKING	ASCORBIC ACID				
		Retention after blanching and chilling	After cooking			
			Content		Retention	
			Drained peas	Liquor	Drained peas	Total
Steam-blanching and water-blanching	**	**	**	n.s.‡	**	**
Steam-blanching and commercial freezing	n.s.‡	—	**	*	—	—
Water-blanching and commercial freezing	**	—	n.s.‡	*	—	—
Steam-blanching and cold-pack	**	—	**	n.s.‡	**	n.s.‡
Steam-blanching and hot-pack	**	**	**	**	**	**
Steam-blanching and commercial canning	**	—	**	**	—	—
Water-blanching and cold-pack	**	n.s.‡	*	*	n.s.‡	**
Water-blanching and hot-pack	**	n.s.‡	**	**	**	**
Water-blanching and commercial canning	**	—	**	**	—	—
Commercial freezing and cold-pack	**	—	n.s.‡	*	—	—
Commercial freezing and hot-pack	**	—	**	n.s.‡	—	—
Commercial freezing and commercial canning	*	—	**	*	—	—
Cold-pack and hot-pack	**	—	**	**	**	*
Cold-pack and commercial canning	n.s.‡	—	**	**	—	—
Hot-pack and commercial canning	**	—	**	**	—	—

† Determined by Student's "t" test.
‡ Not significant.
* Significant at the 5% level.
** Significant at the 1% level.

TABLE 4

*Total solids in frozen and canned peas**

PROCESSING METHOD	TOTAL SOLIDS			
	Raw	After blanching and chilling	After storage	After cooking (drained peas)
Frozen Peas				
	%	%	%	%
Water-blanching	18.1	16.6	17.5†	19.3
Steam-blanching	18.1	19.7	20.1†	21.4
Commercial freezing	—	—	21.0†	22.2
Canned Peas				
Cold-pack	18.1	—	16.2‡	17.4
Hot-pack	18.1	21.1	16.1‡	16.8
Commercial canning	—	—	17.4‡	17.7

* 10-gm. samples of peas dried at 70°C. and 28 in. vacuum for 14 hr.; 10 replicates.
† Frozen, peas plus adhering frost.
‡ Canned, drained peas.

In terms of actual ascorbic acid content (not retention), there were highly significant differences in favor of steam-blanched frozen peas over water-blanched and commercially frozen peas. Of the canned peas, also, there were significant differences between the three types in favor of the cold-pack method.

Total Solids

In Table 4 figures on per cent total solids in the peas handled by different methods are detailed.

The per cent total solids was higher after each sampling in steam-blanched frozen peas than in water-blanched, the difference remaining significant up to the point of serving. This difference was expected, since the water-blanched peas had been immersed in water while the steam-blanched peas had not. Probably a good portion of solids lost to the water was sugar. This assumption was confirmed by higher scores for sweetness given to steam-blanched peas (Table 1). The slightly higher percentage of total solids in the commercially frozen brand may have been due to peas of greater maturity and different variety.

At the time of serving, the total solids in both drained, cold-pack peas and commercially canned peas were significantly higher than in hot-pack peas.

Color

The average a/b ratio (hue values) shows that frozen peas remained similar to raw peas in greenness, whereas canned peas retained little of their green color (Table 5). Little change occurred in the frozen peas after blanching and cooling or in the canned peas after processing. There was no great variation in the "Rd" or intensity values between the raw peas and those processed by either method at the time of serving.

TABLE 5

*Color values[1] as determined with the Hunter color-difference meter**

PROCESSING METHOD	Rd†	a− ‡	b+ ⁂	a/b¶
Raw Peas				
None**	13.6	18.2	23.5	.78
Blanched and Cooled Peas				
Prior to freezing				
Steam-blanching	16.2	21.8	24.2	.90
Water-blanching	18.3	22.5	25.6	.88
Prior to canning				
Hot-pack	17.8	20.1	24.2	.84
Peas after Storage				
Frozen				
Steam-blanching	11.8	19.2	20.1	.95
Water-blanching	13.0	20.6	21.8	.95
Commercial freezing**	9.8	19.1	19.2	.99
Canned				
Cold-pack	13.6	1.6	21.7	.07
Hot-pack	13.1	1.8	21.7	.08
Commercial canning**	18.4	3.7	22.2	.17
Peas after Cooking				
Frozen				
Steam-blanching	12.8	18.8	20.9	.90
Water-blanching	13.4	19.4	21.8	.90
Commercial freezing**	9.9	18.6	20.0	.93
Canned				
Cold-pack	13.8	1.7	21.6	.08
Hot-pack	13.8	1.7	21.3	.08
Commercial canning**	18.8	3.4	21.2	.14

* Standard plate ⁂632 was used, with the instrument set as follows: Rd + 34, a − 20.8, and b + 15.7.

† Rd is a measure of lightness or brightness; the darker the product, the lower the reading.

‡ a is greenness.

⁂ b is yellowness.

¶ a/b is hue. As used here it indicates greenness. The greener the product, the higher the ratio.

** Mean of 5 replicates. All other values are the mean of 10 replicates.

A better color in commercially canned peas than either of the home-canned peas was shown both by readings on the Hunter Color-Difference Meter and by judges' scores. The color difference may, however, have been due, at least in part, to variety or maturity. Commercially canned peas had retained their shape better also. A high correlation was found between the a/b ratio and the judges' scores.

SUMMARY

This study indicates that, of the processing methods studied, a quality and nutritive value (as indicated by ascorbic acid content) most nearly like that of fresh peas, after six months' storage, was obtained in peas frozen after steam-blanching followed by partial vacuum-cooling. Water-blanching followed by freezing was next in effectiveness.

Cold-pack peas scored higher in palatability and ascorbic acid retention than did hot-pack canned peas. Preparation of cold-pack peas also required a shorter time. Frozen peas were scored higher in palatability than canned peas.

Of the peas tested, home-prepared products had a higher ascorbic acid content than the *comparable* commercial products, although those of commercially frozen peas and cold-pack, home-canned peas were similar.

Per cent total solids were slightly higher in commercially packed than in home-processed peas, and significantly higher in steam-blanched, partially vacuum-cooled peas than in water-blanched, water-cooled, home-frozen peas.

Further comparative studies are needed on other varieties and maturities of peas, shorter chilling of the blanched peas prior to freezing, and also with water-chilling of the steam-blanched peas.

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Current Comment

CONTROLS FOR IMPROVED OPERATION[1]

H. H. POPE

Pope's Cafeterias, Inc., St. Louis

Most of the recent developments in personnel training and food service in the restaurant industry can be classified under the heading of *control*. This emphasis on control is the result of the present labor conditions. The trained craftsman has virtually disappeared from the labor market. Industry, highly mechanized, is outbidding the restaurants in the labor market for the available supply of unskilled applicants, and the restaurants are getting poorly qualified people—floaters and undesirables. The *Wall Street Journal* recently reported that employee dishonesty is increasing. Restaurants and retail stores are particularly poor risks for the bonding companies. The U. S. Department of Labor in Chicago reports that three out of every four people who leave restaurant jobs today are people who have *quit*. During the depression, three out of four who left restaurant jobs were *laid off*!

Although the restaurant man may know what constitutes good food, courtesy, and good service, his business is so complex that without good employees he is unable to render the services he would like to give his customers. With poorly controlled operations, in many restaurants where the menus would indicate a food cost of 35 per cent it is actually 45 to 50 per cent.

A recent survey published in a restaurant magazine shows that the net profit in restaurants is now 1½ per cent. The *Journal of Commerce* recently reported that 6,600 of the 22,000 restaurants in New York City will sell out or fail this year. The rate of restaurant mortalities is increasing there.

With food cost dropping, the restaurant man's troubles can only be blamed on the labor situation. Read the "ads" in the business magazines and count the times you see the words: "saves steps," "trouble-free," "foolproof," "labor-saving."

MENU CONTROLS

What are the developments with which the restaurant industry is trying to cope with this labor situation? Foremost would be the trend toward *predetermined menus*. Formerly the restaurant engineer designed a kitchen with a complete variety of equipment, symmetrically arranged, with little thought to the menu. Now, his first step is to determine the menu, after which the equipment is specified, designed, and placed for efficiency and control. This is not a new development. Chop suey restaurants and hamburger stands have been built this way for many years. But, the old idea is being adopted today on a grand scale. One of the best examples of this type of establishment is a chain which operates with a very simple menu. Every task in the restaurant has been carefully planned and standardized. Starting a few years ago in Illinois, the chain now extends as far away as Miami Beach. Within a short time, it has expanded in St. Louis to ten restaurants, all phenomenally successful.

Perhaps no section of the country has been harder hit by present-day labor difficulties than the West Coast. A recent survey shows that dishwashers in San Francisco receive wages almost twice as high as those in St. Louis or Kansas City. It is not surprising, therefore, that this trend toward the predetermined menu and extreme simplification is widespread in California. One drive-in restaurant in California has no car-hops. Customers drive up and get the food from a window in the restaurant. Some distance from the service window, there is an intercommunication system for placing orders in advance, in case there is a line of cars waiting for service. This restaurant serves only hamburgers, French fries, and malts and has been very successful. Needless to say, it operates with a very low labor cost.

The trend toward the predetermined menu and simplification is by no means limited to the hamburger stand. In Redondo Beach, California, one small restaurant accepts only one dinner reservation each day. One meal is prepared for a party of from four to twelve persons; the cost per plate is $7. Only one helper is employed by the chef-owner.

In a higher type restaurant with a more complex menu, it is more difficult to gain control, but it can be done. Simplicity, emphasis on short orders, improved system and layout, better supervision, and restricted hours are but some of the methods being used to cope with present-day problems. One of the finest restaurants in California shows what can be done. A hostess is informed of seat vacancies by a system of light signals. Waitresses order their food on an electric writing device connected with the kitchen and are signaled from the kitchen by a light when the food is ready. Soiled dishes are sent to the kitchen on conveyor belts. The labor cost in this restaurant is comparable to that in a self-service restaurant.

[1] Presented at the Missouri Dietetic Association spring meeting on April 16, 1953.

In St. Louis, too, we have many examples of eating places which have found ways to control operations. In one of our department stores, the restaurant features a limited lunch, served on the arm of a chair. Desserts are selected from a cart. The customer pays one price on entering. This restaurant has achieved high customer turnover and public acceptance, offers good value, and appears to be successful. Another department store in St. Louis has a large cabinet facing the dining room which is accessible from both kitchen and dining room. Hot and cold storage shelves hold the featured menu items. It is said that the time which elapses between a customer's placing an order and receiving it is less than 2 min.

Restaurants which specialize in fried chicken, broiled steaks, or fried sea food are among other types of service which have been able to give the customers good value while paying adequate wages and making a profit.

The trend toward systematizing and simplifying is also seen in the industrial feeding field. Many industrial cafeterias now have complete self-service for most menu items including coffee, sodas, and milk, and they are now being arranged so that the customers can bus their own dishes. The menus have always been simpler than those in public restaurants. Industrial cafeterias seem to be in an exceptionally good competitive position today and pay more for labor, on the average, than other eating places.

ACCOUNTING CONTROLS

Simplification of restaurant service makes it possible to improve *accounting controls*, and the simple menu is especially useful in facilitating such controls.

One of the most interesting developments of this kind is the punched card system. A machine has been developed which will register the marks from a special pencil. A restaurant chain has put spaces on its food checks for each item served; the waitress puts a mark in the proper space for each item ordered. These food checks are tabulated mechanically and a most complete set of figures is available in a short time. Among the items of information which can be shown are: unusual losses or unexpected gains, losses of individual items, losses from individual stores, and losses from waitresses. Checking time of service on the sales check makes it possible to show the number of customers served during each period of the day. Customer preferences are indicated clearly. Errors are detected. I believe we will soon see this system widely used in the restaurant industry.

The common practice in cafeterias of having a food control checker, as well as a price checker, has been discontinued in most instances because of the cost.

Accounting seems to have improved generally in the industry. More restaurants are breaking down their food cost into individual classifications. More forms and better systems are being used. Better cash registers are being provided for itemizing, adding, and printing checks, and generally controlling transactions.

SPACE SAVING FOR CONTROL

Better control is being achieved in restaurants by *devices which overcome space problems.*

A department store in Detroit operates a fountain restaurant which features food carried out on a belt, stopping at the proper station through electronic control. The belt also carries back the soiled dishes. It might be pointed out, however, that such a system alone does not guarantee success, for a similar operation in St. Louis has not done as well. The assembly line technique is used in a hospital in Connecticut for tray production. Conveyor belts are being used for banquet service at the Ezra Cornell Hotel in Statler Hall in the Cornell School of Hotel Administration. The belt carries the banquet plates from the kitchen to a horn of plenty in the dining room. The belt may be reversed to carry back the soiled dishes. Where conveyor belts are used for an assembly line, automatic vertical lifting devices have been found to help speed the work of the assembly line employees. Such equipment is even being provided for bottled milk and individual slices of bread. *Conveyors* are beginning to be used in stockroom work—slide conveyors for carrying case goods downward, or lift conveyors for raising goods. Light and inexpensive roller sections carry the goods horizontally. Pallets are being used for large operations. Other devices which overcome *space* carry written messages. Intercommunication systems, too, are being used effectively. One new type carries messages through the regular electric wires, eliminating the need for special wiring.

COOKING CONTROLS

Restaurants are depending on better cooking methods for control. In general, short order cooking is being emphasized because of its positive portion control. Cooks are beginning to find that steam cookers are fast and simple to use. They permit small quantity cooking, require no stirring, and improve the quality of the finished product. Deep frying is also a simple, increasingly popular method of cooking. The new infra-red ray cooking is a great merchandising device and produces delicious, hot, juicy roasts, as well as being a simple, easily controlled process. Infra-red lamps are also being widely used to hold food hot at stations where it is waiting to be picked up by waiters and waitresses.

Better coffee urns offer positive control. The cut-off syphons and the automatic agitators of recently developed urns make coffee production almost fool-

proof. One restaurant in California is featuring a new machine which automatically prepares hamburgers and milk shakes.

Improved refrigeration is offering other methods of control. Through refrigerated counters, the labor and expense of ice displays are being eliminated. Walk-in refrigerators are being built with the inside and outside floors flush so that trucks of merchandise can be rolled right into the box, saving extra labor of transferring food.

Freezers have proved a boon to many restaurants, permitting storage of an extra quantity of short order food for an emergency. In addition, prepared food, gravies, sauces, leftovers, pies, and cakes are being stored. Storage of prepared food spreads out the labor and eliminates the danger of being caught short in a rush. Perhaps there is a big potential take-out business in this prepared, frozen food. Certainly restaurants could prepare better frozen food than the large food processing plants.

IMPROVED PRODUCTS

Restaurants are achieving control through increased *use of improved products* available on the market. Improved starch makes it possible to prepare pie fillings in advance. Powdered milk has simplified the addition of milk solids to our recipes, as well as greatly decreasing costs. Large packers are offering portioned meats in increasing varieties, and many firms are now selling ready-mixed breading.

AUTOMATIC MECHANICAL CONTROLS

Many control devices are being developed to act as *automatic watchmen*. Detergent meters can be attached to dishwashing machines to show when compound should be added or rinse water should be changed, and electronic devices will even add washing compound automatically. A system of thermostatically controlled lights on the manager's desk can be connected with the cooling system, the refrigerators, the heating system, or the hot water system to show when there is trouble. Temperature alarms can be installed on freezers, sterilizers, and refrigerators to sound an alarm when temperatures deviate from a specified standard. Restaurant men are finding that it pays to take daily readings of water, electric, and gas meters to make sure that usage of utilities is not out of line. Timers are being used to control cooking operations, and time stamps are being used with job tickets to control various tasks, such as potato peeling.

SANITATION AND MAINTENANCE CONTROLS

There have been many developments to make *cleaning and sanitation easier*. Restaurants are being designed for easier cleaning. Equipment is being placed on bases. Floors are being pitched to drains. Clean-up sinks are being provided in each area.

Pot sinks are being made so that pots will cascade from the rinse tank to the wash tank. Water added to the rinse tank causes soap scum to float off into the wash tank. When the wash tank is full, its floating residue runs off into an overflow. This saves much water and detergent because the tanks can be cleaned without complete draining.

Plastic floor coverings seem to promise easier maintenance. Also in the realm of plastics, the new plastic covered dish racks will eliminate the dowel replacement of wood racks and the metal marking of the all-metal racks. Toweling has really been eliminated with a new process for rinsing utensils.

Home-type automatic washers and dryers are being widely used to cut laundry costs and to save handling, bookkeeping, and inventory costs.

Synthetic detergents are making floor maintenance and pot washing easier. The new rayon cellulose cleaning cloths rinse clean, don't hold dust and odor, and cut laundry costs.

Garbage disposal units at all stations are eliminating garbage cans and the labor of handling the cans. Even the old restaurant problem of insects has been largely overcome with the new fly control devices and such chemicals as chlordane.

All over the country restaurant men are reexamining their policies to see if better control can be achieved. They are asking themselves: Do we really need ashtrays, tablecloths, cloth napkins, silver plated utensils, and chinaware?" The use of plastic tableware is becoming increasingly widespread. Plasticware is being offered in a new variety of shapes, sizes, and colors. Recently a plastics company brought out a platter with a molded place for a cup. This promises to be an ideal, convenient, and economical service for a small meal.

Restaurateurs are examining their hours of service with a view to concentration on the profitable time of day. Menus and services are being changed to conform with people's eating habits and living habits. The automobile, and more recently television, are having revolutionary effects on the restaurant business. Television has fostered new emphasis on the take-out business, the biggest development of which is perhaps the great variety of specialized containers and boxes which make the service more attractive and practical both for the restaurateur and the customer.

The restaurant man is even learning to control his customers' reaction through better use of light, color, and wired music. Certain fluorescent colors detract from the appearance of the food; others enhance it. Soft lighting and wired music create a relaxing atmosphere. Incidentally, wired music has been found helpful in the kitchens and office, also.

PERSONNEL CONTROL

Personnel relations are being improved in the restaurants. We find more restaurant people aware

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Calcium	.24 gm.	.5 gm.
Phosphorus	.27 gm.	.4 gm.
Iron	1.5 mg.	4.4 mg.
Vitamin A	843 I.U.	1745 I.U.
Thiamine	.12 mg.	.7 mg.
Riboflavin	.45 mg.	1.6 mg.
Ascorbic Acid	2.0 mg.	26.4 mg.
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of the advantages of scientific personnel selection. Working conditions are being made more pleasant. Kitchens are being air-conditioned or, at least, better ventilated. How many of the present-day applicants would accept work behind the old-time range? Table heights are being adjusted for comfort and efficiency. Seating is being provided wherever possible. Gene MacKay, industrial relations specialist, says: "The mere fact that work can be made easier, with resulting decrease in fatigue, is well worth accomplishing and should not be overlooked. It is possible that, in the long run, it will result in fewer manhours, which will bring a reduction in payroll cost." More restaurants are offering fringe benefits, such as health and welfare plans, to hold employees. Many restaurants are changing their method of handling meals for employees, offering higher pay and selling meals at a discount. Those who have tried this system generally agree it is a good method of controlling the troublesome problem of employee meals.

TRAINING CONTROLS

Restaurant training is improving. There is an increasing use of operations check lists for supervisors. The use of the check list is helpful and fair to new employees and seems to encourage patience on the part of the supervisor. The procedure is also being used to follow up training and assist supervision.

Training slides and films are now available for many tasks. One trade magazine is preparing a 35-mm. color slide series on housekeeping and maintenance. I believe the industry needs more films of this nature. Other magazines are listing cleaning and sanitation procedures.

Restaurants which are learning to train the unskilled applicant are finding out that he may make a better employee in the long run and can be taught to adopt some of the practices which our old-time cooks resist, such as low-temperature meat cooking and the use of dry powdered skim milk as a dry ingredient in the recipe. Restaurant people are beginning to realize the limits of inexperienced employees and are adjusting the jobs so that the work is easy enough to provide on-the-job training. For example, many industrial cafeterias with the inexperienced help now use two checkers on a cafeteria line to achieve greater speed. On-the-job training seems to be the only way of getting trained help, for there are few schools turning out restaurant employees.

On the other hand, there are many schools for top management. Even the high school training programs seem to be designed to turn out people for the top bracket jobs. Incidentally, we have found that these high school students while in training are interested employees, and their presence also tends to raise the morale of people with whom they work. An ever-increasing number of schools and colleges, recognizing the importance of the food service industry, are offering restaurant and hotel training courses. These schools are also recognizing that knowledge of food and food preparation is by no means the only qualification for restaurant management. Elston Ireland, former President of the National Restaurant Association, when asked how much food preparation training each student should have, replied: "Well, I'm not so much concerned about that, but I am concerned in how much work they get in human relations." The *Journal of Commerce*, in a recent article on restaurant operations, said: "The restaurateur must combine the talents of processor, retailer, host, labor expert, efficiency expert, and executive."

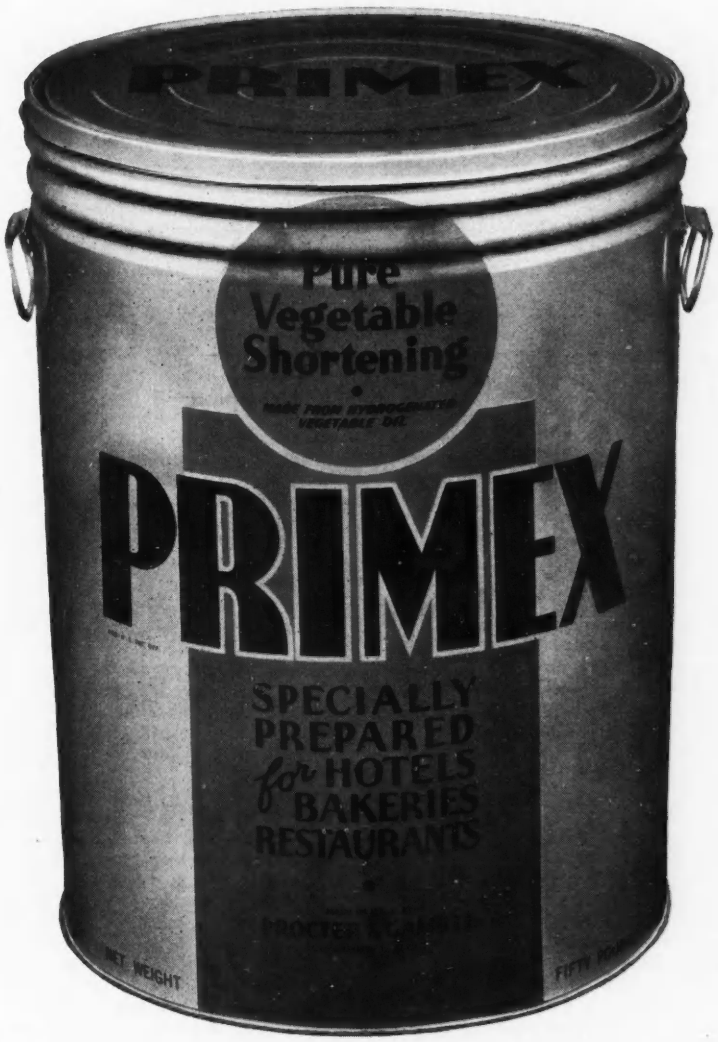
FUTURE NEEDS

Many developments are still needed in the restaurant industry. We need better methods of molding hamburgers, for instance; the machines we now have are too complicated and hard to maintain. We need more economical uniforms; perhaps the new miracle fabrics will provide us with economical uniforms which will be attractive without ironing. We still need hot food storage cabinets which conform to standard steam table pan sizes. We need cafeteria trays as good as the new plastic dishes. We need simpler ways to clean floors. Cafeterias would welcome better checking registers that would combine the functions of the itemizing and adding machines. With this type of register, the pressing of one key would record the sale of a food item adding its price to the food check.

Yes, there's much to be done, for we must be efficient to meet the competition for today's higher priced labor. Or, we must develop our system to utilize unskilled, less desirable labor. Either way, *control is essential.*

Blanching Protects Frozen Peas' Flavor

If not blanched before freezing, raw peas develop an off-flavor during several years' frozen storage. Pre-blanched peas retain palatability. Dr. Frank Lee of Rutgers University isolated the lipids in the peas and has reported that the lipoxidases present in raw peas hasten the oxidation of fat. These enzymes are inactivated by blanching. It seemed that the cause of the off-flavor was, at least partially, rancidification of the fat.—*Reported by Dr. Faith Fenton, New York State College of Home Economics, at the United Fruit Company's Second Annual Cookbook-Recipe Conference in New York, November, 1952.*



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Book Reviews

Building America's Health. Vol. 1. Findings and Recommendations. A Report to the President by The President's Commission on the Health Needs of the Nation. Washington: Government Printing Office, 1952. Paper. Pp. xiv + 80. Price 50 cents. *Also:* Raleigh, North Carolina: Health Publications Institute, Inc., 1953. Pp. 143. Price $1.50 paper; $2.50 cloth.

The President's Commission on the Health Needs of the Nation, headed by Dr. Paul B. Magnuson, was appointed with a broad mandate to make "a critical study of our total health requirements, both immediate and long-range, and . . . recommend courses of action to meet these needs." This report is made up of eleven chapters. The comprehensive scope of the study is seen in its recommendations.

The Commission, after declaring that the "maintenance of health must now be added to food, shelter, and clothing as one of the necessities of living," formulates a set of principles to be used as a guide in approaching our health problems. In its chapter on health personnel, the Commission notes that "the cry for more health personnel was sounded at almost every panel and at every public hearing held . . . From the big cities and from the forks of the creek, the people asked for more physicians, nurses, dentists, public health personnel, and auxiliary medical workers." It found that today the physicians and nurses serve as the hub of a health services wheel around which revolve several hundred thousand paramedical workers. This latter group of workers represent more than thirty specialties, such as dietitians, nutritionists, social workers, and physical, occupational, and speech therapists. "Although these auxiliary specialties are relatively new, there has been an overwhelming demand for their services." To overcome the deficiencies, certain recommendations were made in regard to financial crisis of the educational institutions, economic barriers of individuals who want to enter the health professions, and the need for additional Negroes in the professions.

Other areas studied were health facilities, including hospitals, nursing homes, and home care and rehabilitation centers; organization of health services, both public and voluntary health agencies and professional associations; medical research, including mental health, chronic illness, and administrative research; and financing personal health services with consideration of the various payment plans.

The Commission has recommended that Congress establish a Department of Health and Security. The report does not go into details for the proposed organizational structure. In its discussion of the relationship of health to security, the Commission states: "Health progress depends in large part upon better housing, better nutrition, better education, and related measures which promote the well-being of people . . . So fundamental is this interrelationship that it indicates the desirability of combining health and security functions in a strengthened organizational structure."

In the section on special aspects of health services, the recommendations cover three of the major categories of comprehensive health services: promotion of health, prevention of disease, and rehabilitation. The Commission reports that while striving for an ideal comprehensive health service, there are some special problems affecting great numbers of people which require special efforts for their solution. These are: chronic disease, mental disease, dental disease, environmental health, and accidents.

In studying the health problems of special population groups, the Commission focused attention on the following: mothers and children, industrial workers, rural people, migratory workers, the aging, military personnel, veterans, and other federal beneficiaries.

At the end of the report the Commission made rough estimates of the federal government's share in support of the advocated health program (except for support of mental disease and tuberculosis) and stated the present expenditure for civilian health activities.

The Commission recommended that Congress establish a permanent Federal Health Commission to make a continuing study of the health needs of the nation and of the practical means of meeting them. Also, it emphasizes the importance of comparable health planning bodies on the state and local levels.

Throughout the report the recommendations given are specific and indicate the lines of action which the Commission feels will result in health progress. Many of these recommendations have implications for dietitians and nutritionists and should be of interest to those working in the health professions.—*Geraldine Piper, Associate Professor of Nutrition, The University of Tennessee, Nashville.*

Cost Control for the Hospital Department of Nutrition. A Case with Laboratory Problems. By Neva Henrietta Radell, Ed.D. New York: Ahrens Publishing Company, 1953. Unbound, mimeographed sheets. Pp. 21. Price $1.

This is a booklet of problems presented for laboratory practice in keeping records and controlling cost in hospital departments of nutrition. They may be used in any class or workshop in management for dietitians or food service managers, for they give a pattern which may be followed in hospitals or any food service department within a larger organization. Both daily and monthly cost control systems are shown. Forms for records are suggested.

The booklet could also be used as a self-teaching project. The records are simple and do not require the knowledge of double-entry bookkeeping.

This should be a help to the administrative dietitian who feels the increasing need for greater knowledge of cost control or who desires a reference for establishing any part of a simple control system.—*Mildred Bonnell, Assistant Director, University of Washington Dining Halls, Seattle.*

RECENT BOOKS RECEIVED

Standards of Care for Older People in Institutions. Section II. Methods of Establishing and Maintaining Standards in Homes for the Aged and Nursing Homes. By the National Committee on the Aging, of the National Social Welfare Assembly, 1953. Paper. Pp. 112. Price $1 per single copy.

The Short-Cut Cookbook. By Edith M. Barber. Everyday Handbook Series. New York: Barnes & Noble, Inc., 1953. Paper. Pp. 145. Price $1.

Magic Half Hour Dinners. By Anita Abbott. Greenlawn, New York: Harian Publications, 1953. Paper. Pp. 128. Price $1.

Casserole Magic. By Lousene Rousseau Brunner. New York: Harper & Brothers, 1953. Paper, spiral bound. Pp. 180. Price $3.

Reduce and Enjoy It Cookbook. By Elaine L. Ross. New York: Harper & Brothers, 1953. Cloth. Pp. 146. Price $2.50.

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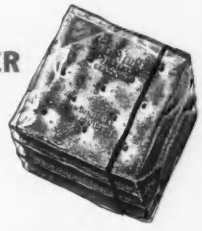

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Our Representatives Report . . .

Denmark as Seen by a Mary Swartz Rose Fellow

MARY K. BLOETJES, PH.D.

Professor and Head
Department of Institution Administration
The Florida State University
Tallahassee

In March 1952 I sailed for Denmark on a freighter to do a doctoral study of "the professional work of, and the training program for Danish hospital dietitians." I embarked unaccompanied by colleagues and ill-equipped in the Danish language. There were several disturbing questions in my mind, even though I had many friends in Denmark whom I knew would help me. What would I find as material for a doctoral thesis? How long would it take to collect the data? Could it be done with my limited knowledge of Danish? How should I begin after I reached Copenhagen?

On arrival in Copenhagen, I communicated with four friends who had offered to guide me in my study. They were: Andrea Eriksen, a Past-President of the Danish Dietetic Association and the Director of the Okonoma School (dietetic school); Johanne Sørensen, the current President of the Danish Dietetic Association; Kai Pharao of Det Danske Selskab, an organization sponsoring international cultural exchange; and Henry Avnslev, President of the Danish Society of Hospital Administrators. It was through their constant help and guidance that I contacted the many persons who gave generously of their time and contributed data for the study.

I found that during the last twenty-three years a training program for hospital dietitians has been developed by the Danish Dietetic Association. It is directed and administered by members of the Association, and its faculty is comprised of excellently qualified persons. The program consists of ten subjects which are given at the end of a three-year, in-service hospital apprentice period.

Dietetics in Denmark has many areas that are closely related to those of the profession in the United States. Danish dietitians plan menus, purchase food, supervise and train employees, keep records, and consult with various persons who are closely connected with their work. I was impressed with the fine delegation of responsibility, the meal production being closely supervised by dietitians trained in the program which the Dietetic Association supports. I even found a job analysis of the Danish hospital dietitian which had been written in 1865. Almost a hundred years ago, the dietitian was recognized as a person of responsibility in Danish hospitals.

During the months of collecting the data, many experiences and impressions contributed to rounding out my understanding of life in Denmark and frequently aided in understanding international relationships on the European continent. For example, I found that there is a logical reason why there are differences between people, societies, behavior patterns, and life in general among countries; that technologies which are practical in the U. S. are not necessarily practical in other countries in the immediate situation. I found that the language of a country reflects the emotions, the thinking, and the psychologic outlook of a people; that a knowledge of the native tongue is an important tool for the research worker in any foreign country, even though a large percentage of the population can speak the researcher's tongue.

Life in Denmark offered new and exciting experiences to me through observations noted in my daily activities. There are automatic machines on the streets where one may buy a variety of food items as we buy packages of cigarettes. Mail boxes are constructed with slots on two opposite sides, permitting letters to be posted both from the street and the sidewalk, a great convenience to bicyclists with which Denmark is heavily populated. Children's beds may be extended as the infant grows; the lower half fits into the upper half and may be pulled out to a greater length as the need demands. I found plastic edged, flexible rubber rulers to be practical and convenient when ruling on an uneven table or desk.

For the first time, I heard the notes of a live cuckoo bird as I rode through a forest on my bicycle, and it was thrilling to see a stork standing on one leg in his nest atop a barn roof in the countryside. The strawberries which I ate as I picked them in a hospital garden in Skanderborg were deliciously warm with Danish sunshine.

The Danish smorrebrod (open sandwiches) are ravishing culinary achievements of color and delectability. Danish food is always attractively served. Flower blossoms are scattered over a pure white damask tablecloth to decorate the luncheon or dinner table on festive occasions. Coverless oval crystal casseroles containing lighted candles are used for table service in restaurants to keep food at the proper temperature, and silver serving trays are placed directly over the flame, making both a functional and artistic table piece.

The Christmas advent kranse, a wreath of greens holding four upright Christmas candles is suspended, horizontally from the top of a standing pole and is seen in almost every home during the holidays. It is a beautiful and lasting window or table decoration.

As my new friends became interested in my study, I was frequently invited to meetings and informal gatherings of professional groups. The Board of Directors of a hospital in Jutland entertained me at its dinner meeting, as did the Board of the Danish Hospital Administrators Association in Copenhagen. On the latter occasion, an illuminated ice form was served on a large silver tray surrounded by ice cream mounds which were decorated with tiny American and Danish flags, a tribute to the Danish-American relations that exist in the hospital field. I attended both a faculty meeting of the Økonoma School at which curriculum plans for the com-

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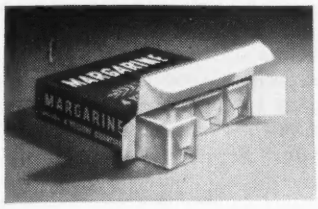
INSIDE SCIENCE

The Vital Story of MARGARINE ENRICHMENT

How They Made Margarine a Better Food

by Science Writer



Over a hundred million pounds of margarine are used a month as a table spread, a tasty seasoning for hot vegetables and for many other purposes in cooking and baking. Included in the "Basic 7" food list, it serves as one of the finest and most concentrated energy foods. It is a shining example of a food which has been made repeatedly better.

In the original product which was invented more than 80 years ago, beef fats were used. Later these were replaced by lard and then by vegetable oils. When raw the latter, however, had several drawbacks: an unpleasant odor and taste, unsatisfactory color and a low melting point. These have been overcome by scientific refining methods, hydrogenation and use of certified food colors. Strictly phrased Federal Standards sponsored by the industry assure maintenance of very high quality, uniformity and nutritional value.

With this history of product improvement, it was natural that margarine makers would make their food a more valuable one by the addition of vitamin A. For over a decade many brands of table margarine were marketed with a label statement that they contained 9,000 International Units of vitamin A per pound. Now virtually all brands are enriched with vitamin A and the minimum amount supplied per pound is 15,000 I.U.—an increase of 40%.

Here are some of the benefits which vitamin A supplies. Scientific evidence is available showing that it helps to maintain normal vision and to overcome night blindness; that it increases the body's resistance to infections; that it promotes physical and mental development; and that it aids in maintaining normal glandular function.

Margarine makers who were accustomed to "fishy" odors and flavors when buying vitamin A sought a new source of supply. They found this new source in synthetic vitamin A—as produced by the famous synthesis evolved by the Roche research team headed by Dr. Otto Isler.

It was natural that margarine makers would adopt synthetic vitamin A for fortification of their products. When they were dependent on vitamin A extracted from fish liver sources, they found wide variations in vitamin A price. Synthetic vitamin A eliminated this disadvantage because its price is reasonable and stable. And a second disadvantage disappeared because synthetic vitamin A has absolutely no "fishy" odor, or taste, or after-taste!

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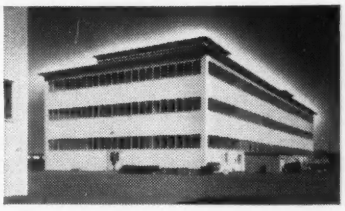

At the huge Roche Park plant of Hoffmann-La Roche over 500 pieces of large-scale chemical engineering equipment in a multi-million dollar plant are working constantly to produce the superior Roche vitamin A.

Again, a development by the Roche people, who manufacture not only vitamin A but many other essential vitamins by the tons, has contributed to the making of a more nutritious food—and thus to the public welfare.

This article, reprints of which are available without charge, is published as a service to the food industry by Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West, Montreal, Quebec.

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ing year were discussed and the opening exercises of the school, when students' singing of the Danish anthem and the address of a noted hospital director were inspiring. It was also my privilege to consult with hospital architects on hospital kitchen layouts and to discuss with a rationalizing expert (industrial engineer) the current work and studies in applying industrial engineering principles in hospitals.

It was at the home of Miss Eriksen, that I gave my longest after-dinner speech in Danish, an achievement of which I was very proud despite the grammatical errors.

Members of the Danish Dietetic Association entertained me one evening shortly before I left Copenhagen to return to the U. S. They thanked me for coming to Denmark to study their work and training program, extended greetings for me to convey to The American Dietetic Association for sponsoring the study in their country, and presented me with a Royal Copenhagen porcelain figurine.

Foreign research can be associated with difficulties to which the researcher is unaccustomed, such as my experience in learning Danish, mastering the techniques of bicycling through the congested streets of Copenhagen, and curtailing the interesting and never-ending data that seemed related to my study. To say "goodbye" to the many friends I left on the quay in Copenhagen was the most difficult feature of my research, for each had contributed in his or her own way to make me feel a welcome guest.

Women's Advisory Committee to Federal Civil Defense Administration

A.D.A. REPRESENTATIVE:

Dorothy L. Bovee, A.D.A. Chairman of Civil Defense
District of Columbia Chapter
American Red Cross
Washington, D. C.

On October 6 and 7, the newly formed National Women's Advisory Committee to the Federal Civil Defense Administration met in Washington. The meeting was called to: (a) orient members of the committee to the Civil Defense program and to brief them on what Civil Defense is doing at the present time, and (b) utilize the Committee as a source group for advice and counsel on women's participation in Civil Defense.

The group was received at the White House by Mrs. Eisenhower, who accompanied them on a tour of the Presidential mansion, after which briefings began. The two-day meeting included: information on the structure and organization of FCDA and its regional offices, the legislative authority granted it, the many varied services—educational, technical, and operational which make up the broad program, a tour of the National Training Center in Olney, Maryland, and a realistic demonstration of street rescue following a bomb explosion.

Some of the recommendations by the various discussion groups were: (a) that women's organizations push the acceptance of responsibility on state governors and mayors for organizing Civil Defense plans; (b) that the Women's Committee promote the use of Civil Defense programs on radio and TV and in colleges and public schools; and (c) that women's organizations encourage their members to enroll in Red Cross Home Nursing and Mass Feeding courses and support blood bank collections.

Members of The American Dietetic Association are concerned primarily with problems of mass feeding in disaster and are taking an active part in the program planning and training activities sponsored by the Mass Care Planning Branch of FCDA. We are trained for participation in the highly specialized field of quantity feeding, and in the event of disaster, we would function as civil defense workers right on the job. We are also qualified to train the many volunteers who would be needed.

Thus we have a place, along with other specialists, in this important Advisory Committee on Women's Affairs in Civil Defense. We are particularly grateful for the opportunity to interpret to other groups our place in the Civil Defense picture, to learn what other groups are going, and how we may work together to make women's contribution more effective.

National Conference on Food Protection

A.D.A. REPRESENTATIVE:

Margaret King, Director
Dietary Department
Henry Ford Hospital
Detroit, Michigan

Thirty representatives of the food industry and of health departments and organizations from coast to coast met from July 28 to 30 for the First National Conference on Food Protection at the National Sanitation Foundation, in Ann Arbor, Michigan.

Purpose of the Conference, which was cosponsored by the NSF and the National Restaurant Association, was to formulate the first joint food industry-public health policies ever to be drawn up for the protection of food on a national basis. As Walter Snyder, NSF Executive Director, said, "Everybody eats. Food protection concerns every one of us, whether we eat at home, at work, or at any one of the public eating establishments which daily serve some 70 million meals to people eating out."

Special committees were appointed to recommend action in two principal areas: (a) launching a nationwide sanitation educational program for the general public, sanitation officials, and food handlers on the safest and best methods to protect food; and (b) working toward national uniformity in official health regulations and ordinances governing the protection of food.

Through the action of this Conference, it is hoped that a more uniform approach to the vital problems of preparing and serving foods and beverages in a sanitary manner—in the home, at schools, in hospitals, at church and other "socials," in industry, and at all public eating establishments may be achieved.

It was emphasized that the groups attending the Conference would seek to broaden the base of participation and that other groups and persons unable to attend the original meeting will be invited to engage in future work of the newly organized Conference.

EDITORS' NOTE: *A second meeting was held December 1 to 3 to hear reports and recommendations for action from the committees. An A.D.A. representative also attended this second Conference.*

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Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Mary L. Majerus, Dietetic Intern, Veterans Administration Center, Los Angeles; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 20, September, 1953

* Obesity: overnutrition or disease of metabolism? A. W. Pennington.—p. 268.

Obesity. There are indications that excessive energy stores in obesity have a significant degree of independence of the energy balance. This appears to necessitate an explanation of obesity on the basis of some intrinsic metabolic defect. The decline in energy expenditure which occurs when the obese go on low-calorie diets appears to have the same significance as when people of normal weight are subjected to undernutrition. As an alternative to caloric restriction, a treatment of obesity is outlined which takes into account the metabolic defect, aims at a primary decrease in the excessive energy stores, and allows for weight reduction without a decline in the energy expenditure and without caloric restriction. A diet consisting of 80 per cent of the calories from fat, 1 to 2 per cent from carbohydrate, and the rest from protein is recommended.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 174, August, 1953

* Relation of choline oxidase activity to dietary fatty livers. F. L. Humoller and H. J. Zimmerman. —p. 199.

Choline Oxidase Activity and Dietary Fatty Livers. It has been shown that the liver-choline oxidase of rats fed a diet high in fat but low in choline is greatly decreased. This decrease in activity is quite precipitous during the first week of this diet but seems to approach a relatively constant value if the animals are kept on this diet for longer periods. The fat content of the livers of these animals rose rapidly and continued to rise at a hardly diminished rate for the duration of the three-week experiment. Fatty acids in sufficiently high concentration greatly inhibited choline oxidase of normal liver homogenate, but they also inhibited to the same degree homogenates prepared from dietary fatty livers. Injections of choline and betaine 2 hr. before killing animals with dietary fatty livers had no effect on the choline oxidase activity of homogenates prepared from these livers.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 43, September, 1953

* A method for evaluating the effectiveness of health education literature. G. Greenberg, M. E. Harris, C. F. MacKinnon, and S. S. Chipman.—p. 1147.

Evaluating Health Literature. A survey was undertaken to evaluate the effectiveness of a series of pamphlets on mental hygiene which were distributed to the parents of first-born children in North Carolina. The degree to which established patterns of behavior were altered was used as a measure of the effectiveness of the literature. This article reports the methods employed; statistical grouping of families for study; formulation of the questionnaire; and choice and training of the interviewers. Some of the results of the survey regarding feeding habits are presented.

AMERICAN JOURNAL OF SURGERY

Vol. 86, September, 1953

* Fundamentals of wound healing. Editorial. P. A. Caulfield and H. S. Madigan.—p. 249.

Wound Healing. The type of incision, suture material, and prevention of infection are primary factors in successful surgery. However, there are certain general or systemic factors which merit consideration. Frequently, surgical patients do not have normal cardiac and renal function or are nutritionally under par as a result of their disease. Some of these abnormalities cannot be adjusted, and such patients are considered "poor operative risks." Such conditions as anemia, hypoproteinemia, undernutrition, and dehydration can often be corrected prior to surgery, with improvement in the patient's response. It has been well demonstrated that patients with anemia or depleted body protein heal poorly. Preoperative blood transfusions and a high-calorie, high-protein diet are indicated in patients who have significant anemia or whose nutrition is substandard. The state of hydration, which implies not only body water but also the electrolyte composition of body fluids, is an important consideration in wound healing and response to surgery. Postoperatively, prevention of fluid and electrolyte deficiencies is the best treatment. Except for the more complicated cases, provision for sufficient intake of water and of calories to allay ketosis are all that are required for two to four days. Some electrolytes, notably sodium, are conserved during this period and need not be given. Others, such as potassium, are not, but in a short period deficiency is unlikely. Supplementary oral or parenteral administration of vitamins A and B and ascorbic acid may be advisable.

THE BRITISH JOURNAL OF NUTRITION

Vol. 7, No. 3, 1953

* Choice of diet by rats deficient in members of the vitamin B complex. D. E. Tribe and J. G. Gordon.—p. 197.
* Effect of different starches on the choice of diet by rats. D. E. Tribe and J. G. Gordon.—p. 202.
* The nutritive value of coconut toddy. P. C. Leong. —p. 253.

Vitamin Deficiency Governs Diet Choice. An experiment was undertaken to determine whether normal and deficient rats, when offered the choice of two diets identical in all respects except B-complex content, would select the diet containing adequate quantities of the vitamin. The study was also set up to take account of the possible influence of food-bin position on the choice of diet. It was found that B-complex-deficient rats showed a marked preference for a diet containing an adequate quantity of the B-complex. Rats which were not deficient in the B-complex showed a less obvious but similar preference. As had been suspected, the position of the diet in the cage did appear to influence its selection.

Effect of Starches on Diet Choice. A study was made to determine whether rats offered a free choice between two compound diets, identical except for starch content and both deficient in the B-complex vitamins, would select the one on which they could synthesize the required vitamins. Of those animals allowed to choose between a palatable though deficient diet and an unpalatable diet, which would produce vitamin synthesis, all died—presumably because they did not select a sufficient amount of the diet permitting vitamin synthesis. The animals which were allowed to choose between two palatable diets, both deficient in B-complex, chose equal quantities of both. All rats allowed to choose between a palatable diet, deficient in the B vitamins; an unpalatable diet producing synthesis; and a palatable and completely adequate diet chose the palatable and adequate diet.

Nutritive Value of Coconut Toddy. Coconut toddy is the partly fermented sap of the coconut palm and is a popular drink in Malaya, Southeast Asia, and the islands of the Central Pacific. It was analyzed for ash, protein, fat, invert sugar, sucrose, acidity, and alcohol. Determinations were also made of the distribution of thiamine, riboflavin, niacin, calcium, and iron between the suspended yeast cells and the fluid of the toddy. The data indicate that the

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consumption of coconut toddy in moderate quantities would not make a significant contribution to the human requirements for thiamine, riboflavin, and calcium. However, the amounts of niacin and ionizable iron in a pint of toddy would furnish about 10 per cent of the recommended daily allowance.

BRITISH MEDICAL JOURNAL

No. 4835, September 5, 1953

* Some apparent anomalies of potassium metabolism. I. W. MacPhee.—p. 528.

No. 4837, September 19, 1953

* Serum vitamin B_{12} concentrations of patients with megaloblastic anæmia after treatment with vitamin B_{12}, folic acid, or folinic acid. D. L. Mollin and G. I. M. Ross.—p. 640.
* Vitamin B_{12} in nutritional macrocytic anæmia. C. R. Das Gupta, J. B. Chatterjea, and P. Basu. —p. 645.

Potassium Metabolism. Potassium deficiency may occur as a result of: deprivation of the ion, excessive loss through vomiting, diarrhea, or in the urine. The loss is accentuated by saline infusion, operation, injury, and perhaps by other stress conditions. Concentrations of potassium in the serum below 3.5 mEq. per liter are generally thought to indicate a deficiency of the cation. The symptoms of potassium deficiency may occur when the serum potassium concentration is still within normal range, and are, therefore, due to cellular potassium depletion. Potassium intoxication is directly related to the extracellular concentration and not to the cell potassium content.

Vitamin B_{12} in Megaloblastic Anemia. The serum vitamin B_{12} concentrations of patients with pernicious anemia in relapse rose from low pretreatment levels to within normal range after single, intramuscular injections of 20 to 1000 mcg. vitamin B_{12}. It is recommended, however, that much larger doses (up to 5 mg.) be given in the first week or two of treatment in order to supply enough vitamin B_{12} for hemopoiesis and replenish the greatly depleted tissue reserves. The serum B_{12} concentrations of patients with various megaloblastic anemias were not altered by treatment with folic or folinic acids.

Vitamin B_{12} in Macrocytic Anemia. The results of treatment with vitamin B_{12} administered intramuscularly to twenty-one patients and orally to seven patients with nutritional macrocytic anemia are reported. The studies indicate that nutritional macrocytic anemia represents deficiency of both folic acid and vitamin B_{12}, deficiency of folic acid being the major and primary factor and that of vitamin B_{12}, the minor and secondary factor in most cases.

DIABETES

Vol. 2, July–August, 1953

An interpretation of diabetes in the light of its pathology. S. Warren.—p. 257.
* Treatment of diabetes. Selection of technic according to severity. A. R. Colwell.—p. 262.
* The management of diabetes mellitus in children. A. L. Chute.—p. 268.
* Dietary instruction for the diabetic. M. Behrman. —p. 271.
* Acceptance of the ADA diets and exchange lists. E. K. Caso.—p. 275.
* Group therapy of obese diabetic patients. J. I. Goodman, E. D. Schwartz, and L. Frankel.—p. 280.

Spontaneous diabetes mellitus in the dog: an account of eight cases. H. T. Ricketts, E. S. Petersen, P. E. Steiner, and N. Tupikova.—p. 288.

* A new technic for the detection of hidden diabetes. Induction of hyperglycemia by feeding glucose after dietary preparation. H. T. Engelhardt, J. A. Greene, and V. C. Baird.—p. 299.

Techniques for Treating Diabetes. The best methods of supportive therapy for diabetes mellitus are reviewed. All grades of severity of diabetes, from the barely detectable to the virtually total, are encountered in practice. The difficulty in maintaining normality through therapy is directly proportional to the severity of the disease. From the standpoint of supportive therapy, three major categories exist: (a) mild forms manageable by diet—desugarization; (b) severe forms requiring various insulin techniques; and (c) all forms complicated by acute illness demanding emergency measures. By the intelligent use of food, insulin, and certain adjunctive measures, normal nutrition and metabolic equilibrium can usually be maintained.

Juvenile Diabetes. The management of a child with diabetes involves four major principles: insulin administration, dietary regulation, control of exercise, and adequate education of patient and parent. Control of juvenile diabetes which approximates as closely as possible the normal physiologic state is the only means apparent to reduce the incidence of late complications (coronary disease, retinopathy, and neuropathy). For example, the diet for a child with diabetes must fulfill all the requirements of the diet for a normal child of the same age. The article includes a description of the dietary control advocated by the Hospital for Sick Children in Toronto. The recommended regimen is designed to provide for slight modification when increased physical activity, occasional social events, or illness require.

Diabetic Diet. The scheme of diet planning contained in the *Diabetes Guide Book for the Physician*, published by the American Diabetes Association, is evaluated on the basis of patient response. The food exchange lists are included in the article. Experience with the exchanges has proved that since the patient learns readily to understand the diet, he follows it with interest. The doctor is not burdened with needless detail in figuring and interpreting the diet for the patient, and the dietitian receives the cooperation of both patient and doctor. Health and good control of the disease are assured by the fact that the plan provides well balanced meals including all the essentials recommended for the normal diet.

Use of Exchange Lists. The diets and exchange lists for diabetic persons, compiled jointly by The American Dietetic Association, the American Diabetes Association, and the Diabetes Section of U. S. Public Health Service, are briefly described. This preliminary report indicates that the acceptance of these dietary guides by hospitals, physicians, dietitians, professional schools, and the patients themselves is widespread.

Group Therapy for Obesity in Diabetes. In Cleveland, obese patients with diabetes, who had been unsuccessful in trying to lose weight individually, were brought together to test the effectiveness of the group approach to weight reduction. The manner in which the weekly sessions were conducted is described, and their results are presented. Ninety per cent of the patients lost weight and found that their need for insulin either decreased significantly or disappeared completely. The salutary physical and psychologic conditions which are present in the group approach are discussed.

Detecting Hidden Diabetes. Five hundred apparently healthy persons who have been examined in detail two to twelve times before were subjected to a screening test for diabetes. Each followed a known diet for three days and then ingested 50 gm. glucose after the standard breakfast. Those individuals who had hyperglycemia (with the blood sugar over 150 mg. glucose per 100 cc.) 1 hr. later were subjected to a glucose tolerance test. This method of diagnosis identified diabetes in 2 per cent of the cases previously declared nondiabetic and found the criteria for potential diabetes in an additional 1.4 per cent.

FOOD TECHNOLOGY

Vol. 7, August, 1953

* Occurrence and nature of bacteria in canned beef. J. C. Ayres and A. T. Adams.—p. 318.
* Juice quality of Delicious apples as affected by method of fruit handling. A. M. Neubert, G. H. Carter, J. L. Henry, J. E. Brekke, D. W. Graham, A. Van Doren, and R. M. Bullock.—p. 324.

Studies on the recovery of essence from Florida orange juices. D. A. Morgan, M. K. Veldhuis, R. K. Eskew, and G. W. M. Phillips.—p. 332.

Bacteria in Beef. Studies were made on fresh, canned, and heat processed beef to determine the total aerobic and anaerobic bacterial loads and the aerobic and anaerobic spore content. Thermal processes adequate for the destruction of putrefactive anaerobic spore loads were insufficient to eliminate all spoilage forms. A large number of bacteria, tentatively classed as facultative aerobic spores, survived a 20-min. heating period at 80°C. These spores may play a significant role in the spoilage of canned meats. A need for further study of the role of facultative spores in canned meat is indicated.

Juice Quality of Apples. Maturity, grade, and preprocessing treatment affect widely the juice quality of standard Delicious apples. Ripening after harvest is the most important factor in improving the quality. "Fancy and Extra Fancy" combination-grade apples have produced juices which were considered to be slightly higher in sugars and to have a slightly better flavor than those from C-grade apples given the same harvesting treatment. However, post-harvesting ripening appeared to eliminate the difference. Juices from apples put in cold storage had a different, but equally acceptable flavor.

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2 cups (14 ounces) Orange Jell-O
1½ quarts hot water (140°—160°F.)
2 quarts (2½ pounds) butter pecan, maple nut, or vanilla ice cream, softened until as thick as whipped cream
1 quart (2½ pounds) moist mincemeat
6 baked 9-inch Pillsbury pie shells, cooled

1. Dissolve Jell-O in the hot water.
2. Chill over crushed ice until as thick as honey. Then whip at medium speed about 12 minutes, or until mixture has doubled in bulk and is fluffy and thick.
3. Turn mixer to low speed, add softened ice cream and mincemeat, and mix just until evenly distributed.
4. Turn into baked pie shells at once, allowing about 3½ cups filling per pie. (If mixture thickens too quickly to handle, warm slightly or stir vigorously.) Chill until firm. Garnish.

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JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 1, September 2, 1953

* Pesticides and flavor, palatability and chemical studies on peanuts grown in rotation with cotton dusted with insecticides containing benzene hexachloride. H. Reynolds, G. L. Gilpin, and I. Hornstein.—p. 772.

Vol. 1, September 16, 1953

* Food from the sea. F. J. Weiss.—p. 822.

Vol. 1, September 30, 1953

* Rumen microorganisms. Effects of diet and antibiotics on utilization of nonprotein nitrogen. J. M. Prescott.—p. 894.

Pesticides and Flavor. Palatability and chemical studies were made to determine whether the soil accumulation of benzene hexachloride dust, used to control cotton insects, may adversely affect the quality of peanuts grown as a rotation crop on the same land. Judges generally detected off-flavors in peanut butter made from the peanuts grown following a cotton crop treated with excess of insecticide. Chemical analyses showed that the benzene hexachloride content of the peanuts correlated generally with the palatability scores and with the quantity of insecticide applied. In other palatability tests, the responses of the judges were affected by the form in which the insecticide was present. For example, there was no detection of off-flavor when benzene hexachloride itself was incorporated directly in peanut butter, even when the concentration was several times higher than that in the off-flavored peanut butter from post-cotton peanuts.

Food from the Sea. The author describes various forms of animal and vegetable marine life which are a potential source of food, rich in protein and minerals. The range of useful species spreads from microscopic plankton and algae to giant seaweeds and whales. Marine chemistry has developed improved methods for harvesting and preserving foods from the sea and for utilizing seafood wastes as fertilizer and as dietary supplements for cattle and human beings.

Rumen Microorganisms. The effects of several antibiotics on the utilization of nonprotein nitrogen by rumen bacteria have been investigated. Under conditions of the *in vitro* technique employed, the addition of aureomycin, terramycin, bacitracin, or penicillin caused definite reduction in the utilization of nonprotein nitrogen, the extent of reduction being a function of antibiotic concentration. Rumen liquid from grass-fed steers possessed a significantly greater ability to utilize urea than did that of grain-fed steers. These experiments indicate the desirability of *in vivo* studies before the feeding of both urea and antibiotics to ruminants becomes routine procedure.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 32, September, 1953

The cholesterol-esterifying enzyme of human serum. 1. In liver disease. K. B. Turner, G. H. McCormick, Jr., and A. Richards.—p. 801.

* Nutritive adequacy and clinical tolerance of modified human globin. G. J. Gabuzda, Jr., G. B. Phillips, and C. S. Davidson.—p. 899.

Nutritive Adequacy of Human Globin. Nitrogen balance studies in six men were conducted in a study of the nutritive value of modified human globin. Nitrogen balance and body weight were maintained while globin was given orally as the sole source of protein in a calorically adequate diet. Oral supplementation of globin with isoleucine did not enhance the nutritive adequacy of globin as measured by nitrogen balance. Globin given intravenously as a supplement to a constant diet resulted in an increase in positive nitrogen balance and retention of nitrogen of a magnitude comparable to that observed during subsequent periods when equivalent quantities of dietary protein were ingested. The infused globin rapidly disappeared from the blood indicating it was rapidly metabolized. No serious untoward reactions resulted from intravenously administered modified human globin, although transit flushing, pruritis, and mild pyrogenic reactions occurred frequently.

JOURNAL OF HOME ECONOMICS

Vol. 45, October, 1953

* You are the key to better public relations. J. W. Harden.—p. 561.

* A nutrition education program in Cape Sable Island. J. H. Archibald.—p. 575.

* Homogenized and nonhomogenized milk in the preparation of selected food products. E. S. Wegner, R. Jordan, and H. A. Hollender.—p. 589.

Public Relations. Home economists, like other professional and business people, may use public relations to build understanding and maintain friendship. The author cites personal contact as the primary basis of public relations and recommends the Golden Rule as an economic law. Public relations can do little to alter an organization's character, but are responsible for surveillance over its reputation.

Nutrition Education Program. A survey showed that children had the poorest diets on Cape Sable Island, a Nova Scotia fishing community. The nutrition education program, therefore, was centered in the school, although it extended into the home and community. In reviewing the work, the wisdom of basing the program on actual needs is affirmed. Where the object of an educational program is to influence as large a segment of the population as possible, main emphasis on the school is advised. The nutritionist should be thoroughly familiar with her community and its people, provide true education rather than mere propaganda, and seek other field workers' cooperation through a correlated program.

Homogenized vs. Whole Milk. The behavior of homogenized milk was studied in the preparation of cocoa and chocolate beverages, rennet desserts, and commercial pudding mixes. Whole pasteurized milk was compared with homogenized. The results are summarized. Homogenized milk made cocoa and chocolate beverages pleasingly heavier in body, and cocoa showed appreciably less sedimentation during the ordinary consumption period. Rennet desserts made with homogenized milk were rated higher in consistency and flavor, but lower in texture. Puddings made from commercial mixes and homogenized milk were somewhat creamier in texture. Homogenized milk tended to make products lighter in flavor and color, and rennet desserts and puddings were less translucent.

THE MEDICAL CLINICS OF NORTH AMERICA

Vol. 38, September, 1953

* Modern therapy of coronary artery disease. H. B. Sprague.—p. 1283.

* Bronchiectasis in older people. H. S. Pittman.—p. 1351.

Acute liver disease: its causes and treatment. P. Kramer and B. Fuchs.—p. 1379.

The management of pregnancy complicating diabetes and of children of diabetic mothers. P. White, P. Koshy, and J. Duckers.—p. 1481.

Therapy in Coronary Disease. General management of patients with myocardial ischemia requires limitation of their activities, a reduction in weight, curtailment of alcohol and tobacco, and the use of nitroglycerin with possible depression of the thyroid function. Surgery is of little use in controlling anginal pain, but medical measures, long enough maintained, generally result in the establishment of a significant coronary collateral supply. The ultracentrifuge investigations of Gofman suggested a possible relationship between certain flotation fractions in blood serum and atherosclerosis and led to dietary studies which showed the influence of diets very low in fat and cholesterol upon specific particles in the blood. In general, conditions in which serum cholesterol tended to be elevated were associated with susceptibility to atherosclerosis. However, diets which are extremely low in fats, under 20 gm. a day, cause great weight loss and weakness, and the lowering of the serum cholesterol is not permanent. It was deemed reasonable to advise patients with angina to hold a normal weight and if necessary to reduce them slowly over a period of six months to a year. The omission of added salt was suggested to aid the reducing regimen.

Bronchiectasis in the Aged. In dealing with the management of older people with bronchiectasis, consideration must be given to (a) the aging tissues, (b) conservation of function, and (c) the appraisement of surgery in view of the first two points. Medical management should emphasize the removal of secretions, control of intercurrent infection, and the maintenance of nutrition with a diet high in protein and vitamins with the addition of 100 or 200 mg. ascorbic acid daily. Appetite is helped if the patient can get out of doors daily, but extreme cold or high wind may aggravate difficult breathing.

MODERN MEDICINE

Vol. 21, September 15, 1953

* Overfeeding in early infancy. Medical Forum. N. W. Clein, J. E. Gonce, E. H. Watson, B. Ratner, R. L. Jackson, and M. I. Levine.—p. 156.

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Overfeeding Infants. Six physicians' comments are reported on the question "How frequent is overfeeding in early infancy?" Five of the six felt that quantitative overfeeding was not serious, and that many symptoms and diseases formerly ascribed to it stemmed from other causes, such as milk allergy or improper food. Qualitative overfeeding does occur, particularly of phosphorus and vitamins A and D. Common sense, plus tailoring the feeding pattern to the individual infant, is recommended. Prolonged feedings, as in the case of bottles with too-small nipples, are decried. One doctor cited overfeeding as a real diagnostic problem in some infants, but also notes that it may be rare.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 53, August 15, 1953

* The management of cirrhosis of the liver. J. Post.—p. 1856.

Vol. 53, September 1, 1953

The doctor-patient relationship in the management of diabetic patients and their emotional problems. L. H. Hinkle, Jr.—p. 1943.

Vol. 53, October 1, 1953

* A long-range evaluation of modern methods in the treatment of chronic ulcerative colitis. Z. T. Bercowitz.—p. 2200.

Cirrhosis of Liver. Laennec's cirrhosis of the liver is associated with malnutrition, usually conditioned by alcoholism. A nutritious diet with vitamin supplements is effective in reversing the progressive course of the disease. In the presence of edema and ascites, mercurials, ammonium chloride, exchange resins, low-sodium diets, and intravenous salt-poor albumin are useful therapeutic adjuncts. In the management of toxic cirrhosis, the same principles of treatment are employed with less success. Esophageal varices which have bled are treated surgically. The use of intravenous, salt-poor human albumin along with glucose and vitamins is of value in hepatic coma. The therapeutic aim is to restore the weight, strength, and sense of well-being of the patients. A nutritious diet (carbohydrate, 350 gm.; protein, 100 gm.; and fat, 125 gm.) is the basic treatment. Vitamins of the B complex may be given if there are evidences of specific vitamin deficiencies or if alimentation is poor.

Treatment of Ulcerative Colitis. Adequate nourishment of the patient with chronic ulcerative colitis is of primary importance since he must maintain good general health and strength. In general, it is wise to allow the patient whatever attractively prepared food he would like. Few simple, wholesome foods will cause irritation. The diet should be high in protein, minerals, and carbohydrate, with moderate or reduced fat, and should include all classes of foods. Fruits and vegetables need not be puréed; rather, the patient should be encouraged to eat them in the form he prefers. Eating green, leafy vegetables should be encouraged. If milk is an offender, it can be eliminated. The main contraindications are alcohol in any form, and the so-called "gassy" vegetables. Frequent feedings are often beneficial.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 23, July, 1953

* Antibiotics in nutrition. R. Braude, S. K. Kon, and J. W. G. Porter.—p. 473.

Antibiotics in Nutrition. The literature on antibiotics in nutrition, some 372 references, is reviewed. The growth-promoting effect of antibiotics on pigs, poultry, cattle and sheep, and laboratory animals has been tested, and studies of the intestinal flora of these animals have been conducted. The reviewers conclude that it is impossible at present to judge the permanent value of antibiotics as feed supplements. The evidence is strong that their judicious use usually results in appreciable benefit to the growing of livestock, primarily for the production of pork, bacon, and table poultry, and that they may be useful in rearing calves. However, their effect at the reproductive stages is less obvious, and available information suggests that their use with breeding stock is potentially more dangerous because of the risk of long-term cumulative effects. Although no spectacular bacteriologic change occurs when small amounts of antibiotics are given to animals, there is no doubt that the microbe population of the gut will adapt itself after the continued use of antibiotics as feed supplement. This introduces the danger of developing noxious-resistant strains or of the gradual loss of activity of the antibiotic through the development by the intestinal flora of resistance to its action. Several theories on the mode of action of the antibiotics in promoting growth are also put forth.

NUTRITION REVIEWS

Vol. 11, August, 1953

Pantothenic acid in nutrition. W. A. Krehl.—p. 225.

* Adult standards of body weight in the United States.—p. 229.

* Effect of diet on carbohydrate absorption.—p. 248.

* Fatty acid contents of selected foods before and after cooking.—p. 255.

* Nutritional investigation of synthetic vitamin A in margarine.—p. 256.

Adult Weight Averages. The methodology of recent anthropometric studies conducted for the Army is described. The weight averages for men and women of a given age as calculated from these studies are compared with Army data compiled in 1912 and with more recent data compiled by two insurance companies. A trend toward higher weights for men and lower weights for women is apparent in one set of data but is not substantiated in the other.

Carbohydrate Absorption. The results of various studies on the effect of diet on carbohydrate absorption are reviewed. Both the hexokinase activity of the intestinal mucosa and the rate of carbohydrate absorption have been shown to increase with a high-carbohydrate diet, to decrease under a high-fat diet, and to remain unchanged under a high-protein diet. Since the mechanism underlying selective absorption from the small intestine has not been adequately explained, the channels through which diet brings about these effects are also under conjecture. Evidence for the phosphorylation concept of the mechanism has remained largely circumstantial. The primary effect of diet may be on insulin production and secretion, while the other effects are secondary, perhaps through hexokinase.

Effect of Cooking on Fatty Acids. A survey of the essential fatty acid content of several foods before and after cooking has been made. Spectrophotometric methods were used to analyze meats, poultry, and commercial fats used in baked products and hard candy and as a medium for deep-fat frying. It appears that only minor changes occur in the fatty acid composition of fats in ordinary cooking procedures. Peroxides form somewhat in relation to the temperature and time of cooking, but may be rapidly decomposed by heat.

Synthetic Vitamin A in Margarine. The nutritional effects of high concentrations of vitamin A palmitate in margarine were studied. Three generations of rats maintained on a high level of synthetic vitamin A in margarine did not differ observably from those kept on a regimen of natural vitamin A at the usual level (18,500 U.S.P. units per gram). The criteria of response were growth rate, reproductive performance, and lactating ability. It appears that excessive vitamin A consumption in the form of synthetic palmitate is not harmful to the rat. Synthetic vitamin A concentrates are now readily available, and their blandness and high concentration obviate objectionable flavors and odors in margarine.

PHYSIOLOGICAL REVIEWS

Vol. 33, October, 1953

Genetic, traumatic and environmental factors in the etiology of obesity. J. Mayer.—p. 472.

PROCEEDINGS OF THE NUTRITION SOCIETY

Vol. 12, No. 2, 1953

* Psychiatric implications of disturbances of eating and nutrition. W. M. Millar.—p. 144.

* Anorexia nervosa. C. F. Rolland.—p. 153.

* The effect of lesions in the hypothalamus on appetite. G. C. Kennedy.—p. 160.

The education of the schoolchild in nutrition. E. M. Hale.—p. 166.

The education of housecraft teachers in nutrition (England and Wales). E. R. House.—p. 170.

The education of medical students in nutrition. S. J. Cowell.—p. 173.

Psychiatric Implications of Eating. The alimentary processes have deep-seated emotional and symbolic connotations which, in some forms of psychoneurosis, manifest themselves in highly irregular feeding behavior. The author describes various types of eating disturbances and discusses the relation of emotion to gastric function, the current hypotheses on the mechanics of this relationship, and the nature of the elaboration and symbolization of basically biologic functions.

Anorexia Nervosa. The etiology and clinical features of anorexia nervosa are described, and methods of differential diagnosis, prognosis, and treatment are discussed. The condition involves an extreme aversion to food brought about by

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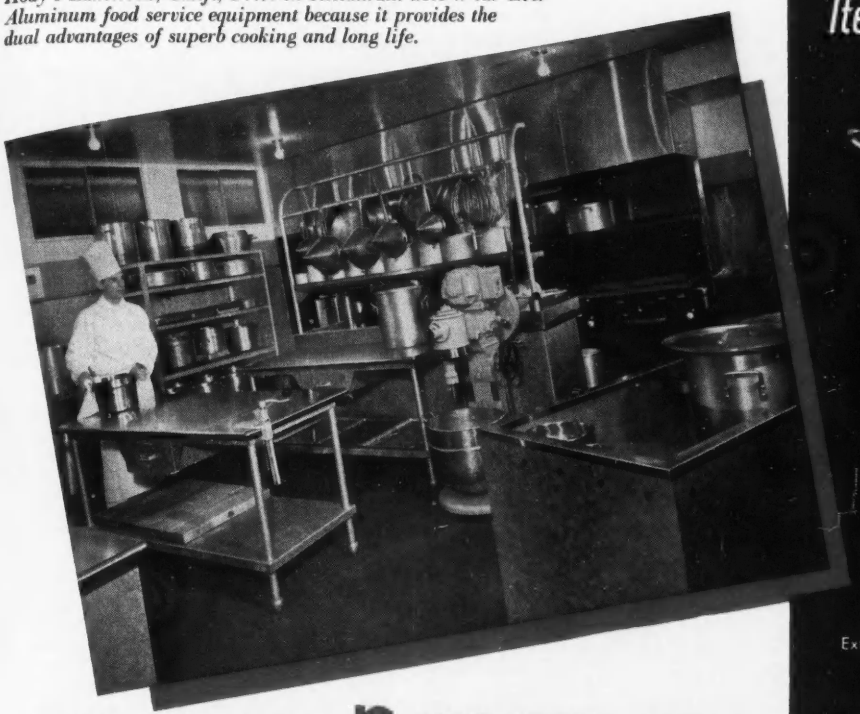

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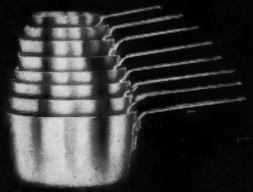

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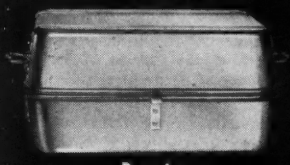

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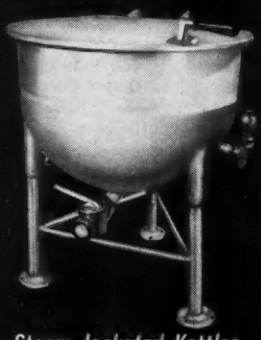

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the development of a serious, morbid mental state. Because of ultimate starvation and intercurrent infections, death results in 5 to 10 per cent of the cases.

Appetite Regulation. Experiments with rats indicate that the hypothalamus has some effect on the regulation of appetite. After damage to the hypothalamus, rats exhibited a voracious appetite which was sustained until an extreme degree of obesity was reached. At that point, appetite leveled off and the animals became more discriminating in their choice of food. After a reducing period of forced starvation, they again became voracious, repeating the cycle through obesity to a return to normal feeding. It is suggested that the cells of the hypothalamus are chemosensitive, responding to the level of circulating metabolites in the blood. When this sensitivity is impaired by lesions in the hypothalamus, the cells do not respond with the same regulatory effect. Thus it would seem that there is a satiety center seated in the hypothalamus. However, the problem remains of how the primitive urge to eat (hunger) as distinct from appetite operates.

ADULT LEADERSHIP

Vol. 2, September, 1953

* Creative board leadership. J. W. Herring.—p. 10.

Creative Board Leadership. Board leadership must be shared to be creative, and the sharing must reach beyond the board to the constituents. Two patterns of boards exist: the "fathers," impressed with their authority and juridical role, and the "neighbors," who listen and explain to the people. The board of "neighbors" becomes the switchboard in a continuous two-way exchange. Judicial and decision-making functions are performed in the full light of open discussion and constant communication, and both functions depend on a "meeting of minds." Although this is a Quaker term, neither it nor the Quakers who practice it are merely soft and gentle. The discussion group spirit is essential to the creative board. The board has a responsibility for decision and action, but is at the same time curbed by responsibility to its constituency and the need to translate its actions to that group. Perhaps the principal case of the "hard" emphasis is factual operation. Some approaches to this are: (a) studying the facts on moot questions, hearing people of differing views and some of expert knowledge where possible; (b) involving board members in "experiencing facts," not merely hearing verbal reports; and (c) testing generalizations against relevant facts and possible alternatives.

AMERICAN RESTAURANT MAGAZINE

Vol. 37, October, 1953

* The spice of life in food service.—p. 46.
* Hearty meals for chilly days. L. D. Freeman.—p. 50.
* Better sanitary control keyed to better restaurant operation methods. I. Silverman.—p. 74.

Spices. Quality spices are a restaurant "must"; inferior ones may ruin public relations as well as food. Restaurateurs need not learn spice grades; a reputable jobber will supply high-quality spices. Pepper, paprika, mustard, chili powder, and miscellaneous spices are briefly discussed. Also covered are: baking spices; garlic, onion, and celery products; monosodium glutamate; and herbs. For freshest flavor, frequent and moderate purchases of spices which permit their use within two or three months after arrival are advised. Spices should be kept tightly covered in a dry, cool, dark place—*not* the kitchen!

Cold-Weather Meals. October starts the season for stews, meat pies, ground beef dishes, and oven dinners. This year there is an abundance of beef, turkeys, fish, and seasonal vegetables. Suggestions are made for serving meat in combination dishes, and autumn fruits are recommended for use in desserts. Fourteen "winterized" quantity recipes are given, mostly for main dishes and desserts.

Sanitary Control. The "operational" approach is advocated in sanitation inspection. Too many prepared items on a menu invite food-borne poisoning from hoary leftovers; readers are taken on an undelightful "trip" through a refrigerator in a restaurant where poisoning occurred. Restaurateurs must also be impressed with the need for buying quantities of food which can be stored properly and used advantageously within a reasonable period. Employees should be of a high type; it is not true that "anyone" can work in a restaurant. Disgusting practices of some food service workers are listed. Principles of scientific cookery also have their part in sanitation. Seventeen points of good operational techniques are enumerated.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 15, October, 1953

* Food cost consciousness. J. W. Bryant.—p. 49.

Food Cost Consciousness. Food service directors must be *managers*; i.e., they must understand the concept of management and know how to plan, direct, and control operations with high efficiency to produce desired results. The planning, direction, and control of a food service department are discussed. It is noted that activities may be controlled, but people cannot. It is, therefore, necessary that all workers—not only the manager—be food cost conscious, if the food cost control system is to be effective. The five major areas of activity in a food service department are explained from a food cost viewpoint: purchasing; receiving, storing, and issuing; menu planning and preparation; service and selling; and management.

FOOD ENGINEERING

Vol. 25, September, 1953

* Benefits high with engineered plant colors. F. Birren.—p. 45.
* Pyramid-type paper bottles made, filled link-fashion. FE Staff.—p. 48.
* Electrostatics create "flash" smoking—coating. R. E. Morse and D. B. Pivan.—p. 70.
* Lard scores again. L. E. Slater.—p. 72.

Colors Pay. Color can promote increased worker production, easier maintenance, improved employee morale, and greater safety. Dingy, poorly lighted areas depress employees and lower morale. Brightness as well as color is important. Brilliant color can be distracting and too much brightness causes glare. Ceilings should be white or an off shade for adequate light. Side walls should be in color. Scarlet and yellow create the feeling of warmth; blues and greens are cool and refreshing. Refrigerated rooms can be psychologically warmer through the use of warm colors such as peach or beige. Bright, cheerful colors for worker uniforms also tend to improve employee morale. Certain colors appeal to the appetite while others create an opposite effect. The wrong use of color in eating places may cause a reduction in customer satisfaction.

Electrostatic Smoke Curing. Several leading meat firms are probing the use of electrostatics to improve the tedious operations of smoke curing. Results are not complete but show promise of condensing a several-hour operation to a matter of minutes. Other applications which may be made of electrostatics in the food field are: (a) chocolate covering of candies and cookies, (b) application of molten sugar and frostings, (c) application of molten plastic to frozen foods, (d) wax coating of fresh fruits and vegetables, (e) coating of meat carcasses to prevent evaporation, (f) glazing fish for freezer storage, (g) de-oiling deep fried foods, and (h) cheese or butter coating of popcorn.

New-Style Lard. A Chicago company has made lard suitable for cake-baking by changing its physical structure. By molecular modification, an arrangement is achieved which is similar to that found in hydrogenated vegetable shortening. However, lard shortening is more plastic at lower temperatures and retains body at a higher heat than many hydrogenated vegetable shortenings. Cake volume has been consistently greater with the new product than with conventional lard, and unsaturated fatty acids—which aid in preventing certain nutritional deficiencies—are unaffected by the process. Modified lard shortenings have been used successfully for a number of baked goods. The patented process is described in some detail, and the history leading to its development is traced.

FORECAST FOR HOME ECONOMISTS

Vol. 69, October, 1953

* Findings in food freezing. H. D. Maughan.—p. 18.

Facts on Freezing. A Food Preservation Workshop at Washington State College brought home economists information on food preservation principles, especially those of freezing. Freezing and canning techniques were demonstrated. Topics covered at the workshop

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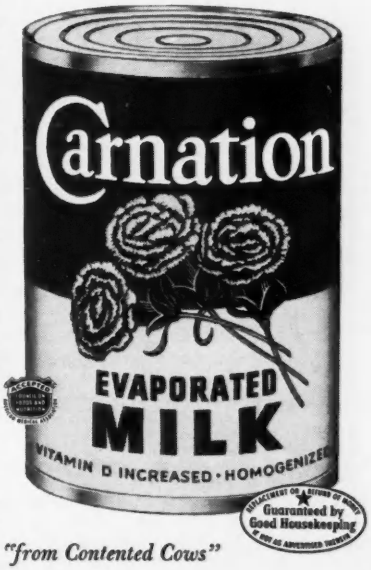
- 4 eggs
- ½ teaspoon salt
- ¾ cup sugar
- 1⅔ cups (large can) undiluted CARNATION EVAPORATED MILK
- 1 cup water
- 1 teaspoon vanilla
- ¼ teaspoon nutmeg
- 9" single crust unbaked pie shell

Beat eggs with salt and sugar until light and fluffy. Add Carnation, water, vanilla and nutmeg. Stir until well mixed. Pour into unbaked pie shell. Bake in hot oven (425°F.) for 15 minutes; lower temperature to moderate (350°F.) and continue baking about 30 minutes, or until custard is firm.



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included: history of food preservation; selection and care of home freezers; refrigeration principles; changes in texture, flavor, and color of food during freezing; inhibition of microbial development; meat-wrapping materials; freezing of cooked foods; freezing costs; and judging quality of frozen foods. Each of these discussions is reported briefly, as well as the demonstrations and tests which were made. A fifteen-point freezer check list is presented.

HOSPITALS

Vol. 27, September, 1953

* Persuasion—important technique in selling safety. K. W. Francis.—p. 127.

Safety Must Be "Sold." Dietitians should plan their departments for maximum flow and minimum friction, and periodically check the safety of equipment. However, the principal approach in accident prevention should be in terms of deciding what people should do, teaching them how to do it, and ascertaining that they do it in the prescribed way. The dietitian should know the job in every detail, and teach it patiently, exhaustively, and repeatedly. There are no jobs that "anybody is supposed to know how to do"; the more elementary the work, the less skilled is the labor likely to be hired for it. Employees must be "sold" on the right way to do the job, and safety records are suggested as a means of continuing motivation after persuasion has taken effect.

HOTEL MANAGEMENT

Vol. 64, August, 1953

* Accidents start before they happen. C. E. Perkins.—p. 35.

Hind quarter of beef. P. F. Muellet.—p. 49.

* Citrus fruits. P. P. Logan.—p. 58.

Accident Prevention. The cost of accidents, whether direct or indirect, is high. It includes the loss of service of injured employees plus the expense of their replacement, as well as replacement and repair of damaged equipment. And, accidents may cause unfavorable publicity and ill will of the public. Employee attitude is the key to safety. Why not campaign for safety along with the program to stimulate courteous service or better work habits? A series of posters, strategically placed, is suggested. The insurance company has a safety engineer; his service is a part of the cost of your insurance. A safety inspector should be appointed. A safety committee may act as adviser, review reports of the inspector, and work out ideas for safe work practices.

Citrus Fruits. This is the fourteenth article in the "Modern Miracles with Food" series, showing the progress made in processing all types of citrus products.

INSTITUTIONS MAGAZINE

Vol. 33, October, 1953

* "Geographic" sanitation held unwise course to follow. W. H. Haskell.—p. 28.
* Put committee to work on lurking hazards to safety.—p. 31.
* Preliminary steps to standardized recipes. M. K. Cranmore.—p. 40.
* Eliminate rodents, insects by closing all points of entry.—p. 44.
* Meat product standards clarified for purchaser. A. A. Frooman.—p. 47.
* Put automatons to work, speed food to patrons.—p. 56.
* Aiding industry, food service can display its efficient techniques. S. M. Hartt.—p. 135.
* Don't let "insurance" of good coffee lapse.—p. 171.
* Consider these factors before buying an oven. J. R. Myers.—p. 179.

Let's Unify Sanitation Standards. "Geographic" sanitation, i.e., local disagreement about equipment and construction specifications and sanitation practices, is unwise. There seems to be little demand for a wide variety of requirements in milk and food sanitation. Due to a lack of uniformity of regulations and failure to apply comparable interpretations to laws even with identical provisions, sanitation regulations have become trade barriers. Sanitation must be considered part of the organization of America for national defense. Industry can lend enthusiastic support to a uniform sanitation program, and the results of such a program will undoubtedly be apparent in the consumer's ability to buy.

Safety Committees. Management is turning to safety committees as the best means of handling an ever-present problem of accidents. A list of operational methods for safety committees has been published by the Safety Engineering Staff of the U. S. Department of Labor in cooperation with the Management Service Division, Small Defense Plants Administration. The list is condensed as a part of this article. The rules, in brief, are: (a) meet regularly; (b) inspect the plant regularly; (c) investigate accidents; (d) develop accident data; (e) develop safe work methods and rules; (f) sponsor safety and first-aid training; (g) see that the institution has adequate first-aid facilities; (h) advertise safety; and (i) plan special features, stressing one phase of accident prevention at a time.

Recipe Standardization. A food service operator, in beginning a recipe standardization program, should evaluate the operation impersonally so that patrons' wants can form its basis. Planning and inventory methods are suggested, and the necessity of employee enthusiasm is noted, as well as a way to organize a plan. A large section of the article, second in a series, is given over to proper equipment. The use of proper tools, incorporation of instructions for using them in writing the recipes, and checking on their performance are necessary in achieving uniform results.

Eliminating Rats and Insects. A thorough method of rat- and insect-proofing is described, including check lists of points to look for inside and outside a building. This twofold "proofing," however, isn't complete insurance against invasion; frequent inspection of the entire premises is also necessary.

Standards for Meat Products. Recent government standards have been established to protect and inform the purchaser of meat-containing products. In addition to meat, these standards cover general contents of the products. The definition and standard of identity established for corned beef hash are described in this article, second of a series. The new regulations are given for meat content of chili con carne with and without beans, beef and lamb stews, tamales, various types of spaghetti, scrapple, and other products. The results of a test of five canned hams and one fresh ham by a restaurant company are tabulated and discussed. The author notes that, despite the new rules, canned meats should still be checked for variations and that they should be tested and tasted hot for best results.

Automatons Aid Food Service. An Indianapolis restaurant, seating 97 persons, serves about 1200 meals a day from 7 a.m. to 5 p.m. Orders are submitted to the kitchen on automatic written message transcribers, and prepared food is delivered to four stations on a two-level automatic conveyor belt. The waitress' side of each station is completely equipped with service items. Various areas of the cooking, serving, and dishwashing sections are described and illustrated.

Industrial Feeding. Factors influencing the success of an industrial food service are discussed. It is important that in-plant feeding operations be planned by someone conversant with food service. The flow of work should be analyzed, flow charts prepared, and detailed written plans made available to the operating manager, if he cannot participate in the planning. Employee training is another important factor in industrial food service, as, of course, is effective cost control, with operations based on a realistic raw food cost percentage or on labor costs. Control of labor cost is essential; with wages going up this can be accomplished by analyzing operations for useless jobs and/or installing labor-saving equipment. Portion control, prevention of food waste, record-keeping, and efficiency check-ups are all noted. Participation by employees in the feeding program is the "acid test" of the food unit's success. Factors influencing participation are: availability of other food facilities, length of lunch hour, and type of food.

Good Coffee Is Cheap. A fine cup of coffee is the best and cheapest "insurance" a food service operation can buy, and this "insurance" should not be allowed to lapse by weakening the brew or substituting an inferior brand. Sold at 10 cents, a good cup of coffee with cream and sugar represents only a 32 per cent food cost—and this item is so important to volume building that it could be charged to sales promotion or advertising.

Buying an Oven? Ovens, often a commercial kitchen's largest and most expensive item of equipment, are available in various types: all-purpose, deck (gas-heated or electric), revolving tray or reel, circular, and peel. The uses of each are described. It is noted that, if both meat roasting and bakery demands are heavy, the chef and the bake shop may need separate facilities. Photographs of the various types of ovens illustrate the article, and a chart shows the capacities of roasting ovens for various types of meats. Pointers on buying ovens

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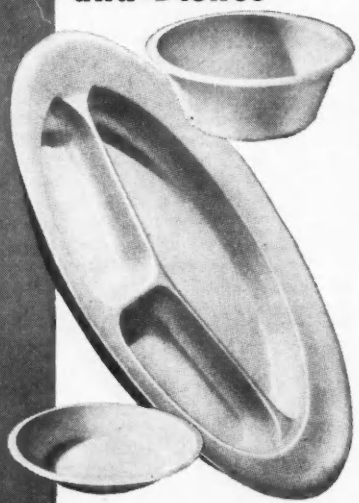

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NEWS BULLETIN OF THE NATIONAL RESTAURANT ASSOCIATION

Technical Bulletin No. 101, August-September, 1953

* White potatoes. Studies covering methods of grading, handling and preparation.

Potatoes. Findings of a study at Michigan State College reveal that hand peeling of potatoes is so expensive that a mechanical peeler quickly pays for itself, and that substantial savings may be effected by separating potatoes according to size before peeling. Other subjects covered in the bulletin include: two methods for preparing hashed browned potatoes; grading by specific gravity to determine mealiness of potatoes; a method for rapid desugaring of peeled potatoes cut for French frying; equipment and procedure for rosin-roasting potatoes in an outdoor furnace. However, rosin-roasting, in spite of the fine flavor it produces, should never be attempted in a kitchen because of the fire hazards involved.

PERSONNEL JOURNAL

Vol. 32, October, 1953

* Discharge for absenteeism under union contracts. E. Ahern.—p. 173.

Discharge Absentees? Union arbitration records were examined as to policies concerning discharge of employees for absenteeism. Amount of absence must be considered. Two other essential factors were noted: (a) the way all employees with high absence records are treated and (b) circumstances which do or do not warrant a verdict of "excessive" in any particular case. Arbitrators emphasize the chronically ill employee's responsibilities to advise the company of his illness, show that he receives regular treatment, and request a leave where needed for full treatment. Also considered is the company's part in helping remedy the employee's absenteeism. The strongest defense against discharge is "discrimination," i.e., using absenteeism as a cloak for the real reason for wanting to get rid of the worker. Another defense is management's letting the employee "hang himself" by failing to warn him of the consequences of his behavior, and another is a sudden "tightening up" of standards without warning, after a period of laxity. Discharge is not entirely a penalty, nor is it merely an example to others; its purpose is good management, because an employee who cannot report regularly for work is of no value to the company.

PRACTICAL HOME ECONOMICS

Vol. 32, October, 1953

* Trying a new food in the school lunch.—p. 37.

Smoked Turkey in School Lunch. In the Utah school lunch program, smoke-cooking was suggested for some of the large supply of eviscerated turkey as a way to add variety to meals. This slow cooking method produced a yield of edible meat almost comparable to that from whole roasting, and the turkey was well received by the children. Although smoked turkey is generally considered a luxury, estimated costs of the program, as shown in the article, reveal that the cost of serving smoked turkey is about the same as for roast turkey and other meats.

RESTAURANT MANAGEMENT

Vol. 73, September, 1953

* Modern floor cleaning methods. M. M. O'Donnell.—p. 42.
* More meat for your money. Hindquarter of beef—Part One. P. F. Muellet.—p. 47.
* Low-cost entrées for autumn appetites. M. L. Casteen.—p. 58.

Floor Cleaning. High-quality equipment for floor care should be purchased in sufficient amount and kept in a clean area. Representatives of equipment manufacturers will train customers' employees in proper techniques and will also supervise the job periodically. Training films are also available to teach conservation of motions and materials, safety, and sanitation. Water should be used carefully, and acid and alkali cleaners, scouring and abrasive powder, and crystal cleaners should be avoided. Such cleaners tend to roughen or pit asphalt and rubber tile floors, and colors may "bleed." Bleeding, however, can be remedied, and the method is described. The article also covers care of terrazzo floors and kitchen floors, waxing, and the uses of vacuum cleaners.

Beef Cutting. The new cutting method, designed to increase meat yield by about 20 per cent, is applied to hindquarter of beef. As in previous articles in this series, a carcass-shaped diagram shows exactly where to cut, and photographs further illustrate the procedure. Pointers are given on: meat selection, increasing portion yield, elimination of waste, proper cooking, carving of cooked meats, and increasing yield of cuts.

Low-Cost Entrées. Popular appeal plus popular prices make combination dishes good light entrées. Meat extender dishes, meat "substitute" dishes, and ways of using turkey and chicken—with one complete recipe—are suggested. Garnishes for these meats are listed.

WHAT'S NEW IN HOME ECONOMICS

Vol. 17, October, 1953

What are the factors that influence food prices? P. S. Willis.—p. 58.

* Beef in the news. R. Staggs.—p. 60.

Beef. Today's beef supply is the greatest in U. S. history. The beef output for the first five months of 1953 was over 1 billion lb. more than that in the same months of 1952, and the beef production and consumption outlook is good. The history of beef breeding in America is traced from the importation of foundation animals from England to modern research done to increase knowledge of beef. The origin of cattle breeds is described. The author also covers: scientific breeding; research in cooking methods; and efforts of the livestock and meat industry to perform its job better.

Now—A coffee with dietary advantages

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This process, which makes Borden's Instant Coffee so fine a product, was developed out of Borden's experience in dehydrating perishable foods—experience that has yielded such products as Starlac (non-fat dry milk), Bremil (powdered infant food), and Klim (powdered whole milk).

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News Notes

A.H.A. Institute on Dietetics. An Institute on Hospital Dietary Administration was conducted by the American Hospital Association in New York City, October 26 to 30. "Dietary Management in Action" was the general theme of the meeting, held for members of the American Hospital Association or those on institutional members' staffs. Some of the topics discussed were: "Inter-Intradepartmental Relationships," "Philosophy of Management," "Management Control of the Dietary Department," "The Physical Plant—Planning the Layout and Design to Meet the Needs," "Purchasing Specifications," "Supervision," and "Equipment." A film, "The Inner Man Steps Out," was shown during a session on "Principles and Art of Administration," and field trips were also included in the program.

FAO-WHO Training Course. A course for nutritionists working in Africa was held recently in Marseilles, France. It was organized on the basis of a Technical Assistance agreement between France, the Food and Agriculture Organization, and the World Health Organization. Attendance numbered thirty fellows of FAO and WHO, representing France, Belgium, Italy, Portugal, Eritrea, and Haiti. The course covered the various aspects of nutrition in the African territories south of the Sahara. Lectures, demonstrations, practical work, and surveys in the field continued for more than two months, and a detailed study of Africa took place, relating to dietary customs, statistics, agriculture, and economy.

FAO Aids Indonesia's "Milk" Plant. Dr. S. S. De, nutrition officer for the Food and Agriculture Organization's Bangkok Regional Office, has gone to Indonesia to help establish a plant for making soybean milk powder. At present, Dr. De's methods are in use in three such plants in Thailand. En route, he will stop in Hong Kong to examine a soybean milk plant and investigate the production of fish meal. He will also visit the Philippines to: demonstrate his method of making soybean milk; discuss with Philippine and UNICEF officials the possibility of a similar plant in that country; and look into the utilization of coconut concentrates in the supplementary feeding of children.

The cost of the new project is being borne jointly by the Indonesian government and the United Nations International Children's Emergency Fund. FAO has previously worked with UNICEF in developing milk substitutes, such as soybean products and fish meal, to alleviate shortages of cow's milk.

CARE Book Program. To fill the dollar gap that prevents many foreign educational institutions from obtaining the latest information, CARE conducts a Book Fund program through which cash contributions provide the best new American scientific and technical works in twenty-three fundamental fields, for universities, libraries, and professional and vocational schools in thirty-nine countries of Europe, Asia, Africa, and South America.

The chiefs of CARE missions abroad receive requests for needed books from institutions in the countries where they are stationed; high on the list are those for the field of nutrition and foods. As with all the book categories, CARE concentrates on the purchasing, packing, shipping, and distribution of books, and leaves their selection to experts in the field. The American Dietetic Association has presented a list for the latest revision of CARE's bibliography, which includes some 2400 titles.

Western Europe, Great Britain, Burma, Ceylon, India, Israel, Japan, Pakistan, the Philippines are but a few of the countries to which the books can be sent, either to an institution of your choice or to a library CARE will select on the basis of immediate need. A contribution in any amount may be made, but a donor of $10 or more will receive a receipt signed by the institutions to which the books are delivered. Contributions or requests for further information can be directed to CARE, 660 First Avenue, New York City 16, or to your local CARE office.

CARE-WHO Program for Asia. A committee of U. S. medical leaders has been organized to campaign for a joint program of CARE and the World Health Organization to provide aid to hospitals in Southeast Asia. The needs of India and other countries were established after investigation by WHO. Dr. Charles F. Wilinsky, Past President of the American Hospital Association and Chairman of the committee, announced that $1,750,000 is needed to fill even the minimum requirements of nearly three hundred hospitals in the area.

Symposium on Food Acceptance. The Advisory Board on Quartermaster Research and Development of the National Research Council sponsored a symposium on food acceptance testing methodology in Chicago in October. Among the topics discussed were: practical aspects of the new field of sensory testing of food products; field testing of Armed Forces rations; new methods of scaling consumer preferences; and various theoretical, psychologic, and statistical aspects of sensory panel and consumer survey testing of food flavor, palatability, and acceptance.

In addition to the technical problems, suggestions were discussed for coordinating the work of various laboratories in the new field and establishing it as a distinct scientific discipline. For the present, integration of the new discipline into an existing organization was favored, and specific moves were planned to establish a Division of Food Acceptance Testing in the Institute of Food Technologists.

Some sixty representatives of industry, universities, and government laboratories attended the meeting, in addition to the speakers.

Interns Graduate. Eleven dietetic interns graduated from the Veterans Administration Center, Los Angeles, on September 30. They are: Sharon Lou Arrasmith, Iowa State College; Cleo C. Bacon, New York University; Jan Heinemeyer, University of North Dakota; Mary K. Hoegger, Rosary College, River Forest, Illinois; Florence A. Houston, University of Delaware; Marilyn A. Jayne, Fresno (California) State College; Evelyn Lopez, University of Puerto Rico; Marion Lysengen, North Dakota Agricultural College; Diana E. Maldonada, University of Puerto Rico; Bethaline A. Routh, University of Colorado; and Ethel M. Smith, Appalachian State College, North Carolina.

American School Food Service Association Officers. Officers for 1953–54 of the American School Food Service Association are: President, Margaret E. Prentice, New York State Department of Education, Albany; President-Elect, Edith M. Cushman, Connecticut Department of Education, Hartford; Treasurer, Martha Bonar, West Virginia Department of Education, Charleston; and Secretary, Mary M. Griffin, Board of Education, Newark, New Jersey.

Plentiful Foods. The following foods, according to the U.S.D.A., are expected to be plentiful during December:

Fruits and vegetables

Grapefruit	Pears, winter
Onions	Potatoes
	Raisins

Protein foods

Beef
Dairy products
Fish, frozen

Other foods

Fats and oils	Pecans
Honey	Peanuts and peanut butter

Public Health Service Appointment. Dr. Floyd S. Daft has been appointed Director of the National Institute of Arthritis and Metabolic Diseases, National Institutes of Health of the U. S. Public Health Service, Bethesda, Maryland. Dr. Daft, Acting Director of the Institute since Dr. Russell M. Wilder's resignation in June, had been Assistant Director and Chief

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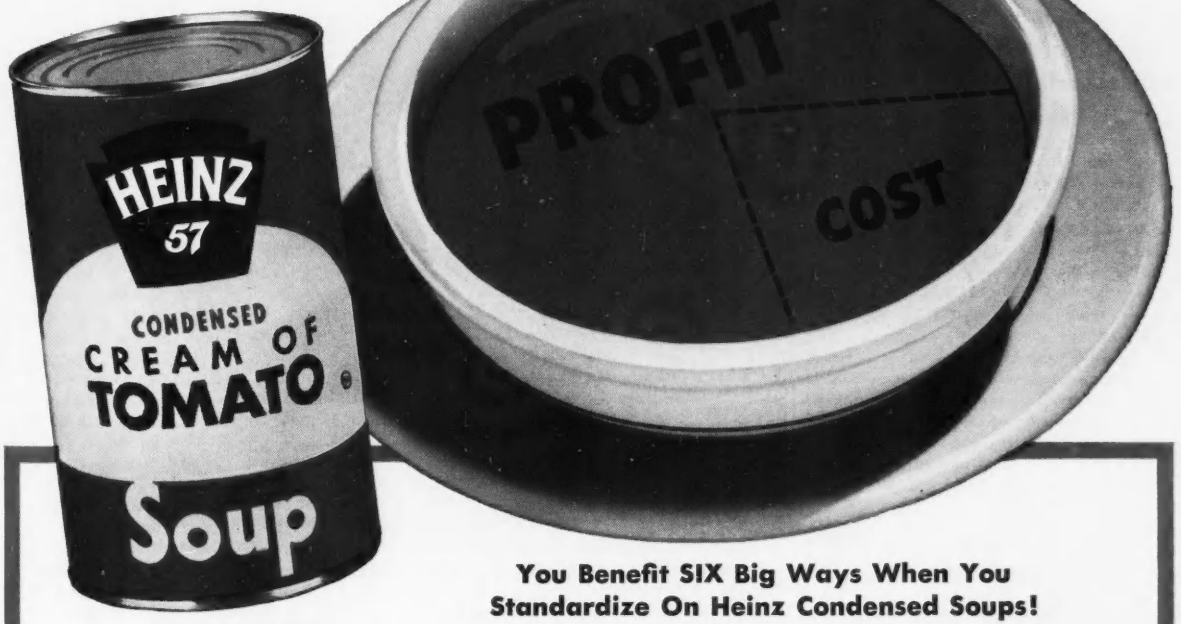

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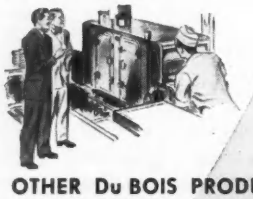

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of Laboratory Research since 1951. He has been a member of the scientific staff of the National Institutes of Health since 1937 and has directed and conducted nutrition studies, particularly on the B vitamins. He was also a pioneer in the study of folic acid.

Dairy Council Appointment. Dr. F. Eugenia Whitehead has been appointed Director of Nutrition Education of the National Dairy Council. In this position, she will work closely with sixty-five affiliated dairy councils to aid in their community nutrition programs and will be concerned with the Council's relations with professional health and education groups and government health agencies. Previously, Dr. Whitehead was the Director of Nutrition, Research and Education for Wheat Flour Institute. She has also been a Visiting Lecturer in Nutrition for the Harvard School of Public Health, from which she holds a Doctor of Science degree.

Quartermaster Food and Container Institute News. Col. John D. Peterman has assumed command of the Quartermaster Food and Container Institute for the Armed Forces, Chicago. He succeeds Lt. Col. George F. McAneny, who has headed the Institute since last January and is now assistant commandant.

Patent on Lysine Now Royalty-Free. E. I. Du Pont de Nemours and Co., Inc. has announced that a patent relating to the use of lysine for fortifying bread and other cereal foods has been made available on a royalty-free basis. The firm recently purchased this patent from a subsidiary of American Maize-Products Corporation, New York City, and placed it on the Register of Patents as a free license. Experimental quantities are available.

Grades for Peeled White Potatoes. The U.S.D.A. has announced the standards proposed for grades of peeled white potatoes: U. S. Grade A or U. S. Fancy; U. S. Grade C or U. S. Grade Standard; and Substandard. Color, uniformity of size and shape, absence of defects, and texture are some of the factors to be considered in deciding these grades, which were requested by institutional users.

Time and Money Cost of Foods. In a test made by the Bureau of Human Nutrition and Home Economics, U.S.D.A., menus made with ready-to-serve foods were prepared in only one-fourth the time it took to prepare the same menus when foods bought raw, with a minimum of commercial processing, or as separate ingredients for baking were used. Meals from the ready-to-serve foods cost about a third more, it was found when food and cooking fuel costs were compared. In a recent report before home management specialists of the Extension Service attending the U.S.D.A. Agricultural Outlook Conference in October, home economists said that a day's diet for four people made from ready-to-serve foods cost $6.70 at Washington, D. C., chain-store prices. Ninety cents were saved when partially prepared foods were used, and $1.80 when the cook did all possible work herself. However, the home-prepared meals for a day required more than 5 hr. of work, compared with about 3 hr. when partially prepared foods were used, and about 1½ hr. with ready-to-serve foods.

Insurance Cook Book. *Metropolitan Cook Book* is the title of an attractive, revised illustrated booklet recently released by the Metropolitan Life Insurance Company. In its fifty-six pages are family-size recipes for: beverages; quick and yeast breads; soups; fish and fish stuffings; meat, poultry, and stuffings; sauces; eggs; cheese and casserole dishes; vegetables; salads and salad dressings; sandwich fillings; cakes, frostings, and fillings; cookies; pies; puddings and fruit desserts; and dessert sauces. An index is included. The booklet also includes tables of oven temperatures, weights and measures, and roasting times for meat and poultry. Copies may be obtained from Metropolitan Life Insurance Company, One Madison Avenue, New York City 10.

Cornell Publication. "Cooking Frozen Vegetables and Fruits," by Dr. Faith Fenton, has been released as Cornell Extension Bulletin No. 873. This sixteen-page pamphlet gives thorough directions for nine ways of preparing frozen vegetables, with advice on preserving nutritive value and suggestions for additional ways to serve them. The section on fruits includes directions for thawing, cooking, and retaining nutritive value. Four recipes using frozen produce are included, as well as time-tables for boiling, pressure-cooking, and baking frozen vegetables. Copies are available from Mailing Room, Roberts Hall, Ithaca, New York, for 5 cents each.

Government Publications. The Federal Civil Defense Administration has issued two new bulletins concerning radioactivity. The first sheet, *Permissible Emergency Levels of Radioactivity in Water and Food* (TB-11-8), describes, for civil defense radiologic and health officials, maximum permissible levels of radioactivity in water and foods to be consumed immediately following an atomic explosion. These levels are consistent with those being used by the Atomic Energy Commission, the Department of Defense, the U. S. Public Health Service, and the Food and Drug Administration. Two tables are presented, giving acceptable amounts of beta-gamma and alpha activity for food and water to be consumed within ten or thirty days. The second bulletin, titled *Emergency Measurements of Radioactivity in Food and Water* (TB-11-9), presents a method for measuring radioactivity in food and drinking water, and describes a way of preparing a comparison standard designed to provide a check against the beta-gamma concentrations tabulated in this and the preceding bulletin. These publications are available from

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the Government Printing Office, Washington 25, D. C., for 5 cents each.

How to Choose and Use Nonfat Dry Milk has recently been released as PA-227 by the Extension Service, U.S.D.A. This attractive green-and-cream folder contains facts on: the advantages of nonfat dry milk, sizes of packages to buy for various purposes, amounts to use and methods of mixing when reliquefying, and amounts to use in preparing various foods. Three recipes are given: dessert topping, using whipped dry milk; biscuit mix, with directions for use in biscuits, muffins, and waffles; and chocolate pudding mix, usable in either pudding or sauce. Copies are available from the Government Printing Office for $1.50 per 100.

The following publications by the Bureau of Human Nutrition and Home Economics are available from the Government Printing Office for the single-copy prices indicated.

"Root Vegetables in Everyday Meals"—Home and Garden Bulletin No. 33. General directions are given for cooking root vegetables, with a tabular guide for boiling times of beets, carrots, onions, parsnips, rutabagas, and turnips. Recommendations are also given on seasonings and sauces, and more than twenty recipes are included, using the vegetables separately or in combination. At the end of the twelve-page leaflet, other government publications on vegetable cookery and preservation are listed. Price: 5 cents a copy.

Poultry—Buying Guides for Consumers—Home and Garden Bulletin No. 34. In this eight-page pamphlet are contained: general information on buying poultry, a discussion of official grading and inspection programs, photographs of styles of packaging and labeling for ready-to-cook and canned poultry, the meanings of the different grades with illustrations, and tips for consumers on choosing styles of processing. Price: 10 cents a copy.

"Honey—Some Ways to Use It"—Home and Garden Bulletin No. 37. Twenty home-size recipes are presented, covering bread, sweet baked goods and other desserts, nougat, pastries, fruit punch, salad dressings, sandwich fillings, and sauces. Also included are general facts about honey and suggestions for storing it, serving it uncooked, and cooking with it. Price: 10 cents a copy.

"The Basic Seven—Eat This Way Every Day" is a colorful 23½ by 18½-in. poster. The Basic Seven food groups are shown in dial form, with the recommended number of servings of each per day. Price: 10 cents each.

Health Manpower Source Book—Section 2, Nursing Personnel has been issued by the Public Health Service, Department of Health, Education, and Welfare, as Publication No. 263. Data have been compiled and are listed in fifty-six tables on the number, distribution, and characteristics of professional and nonprofessional nursing personnel. The data for professional nurses include such facts as: general geographic distribution; age, sex, and marital status; licensure; and nursing education. The licensure and training of practical nurses are tabulated, and distribution of nurses by fields of practice is also included. The eighty-eight-page booklet contains a glossary of terms as well as seventy-six references. It may be obtained from the Government Printing Office for 40 cents a copy.

More Milk Consumption Needed. Enough milk was consumed in the U. S. in 1952 to give everyone under twenty-one a quart a day and those older, a pint—*if* it had been evenly distributed. However, large groups in the population consume far less milk than they could use to advantage. Dr. Hazel K. Stiebeling, Chief of the U.S.D.A.'s Bureau of Human Nutrition and Home Economics, emphasized this fact to state extension leaders at the Department's Agricultural Outlook Conference. Among prospects for expanded markets, Dr. Stiebeling cited low-income city families, farm families without home-produced milk, and families without children. Women as a group, particularly older ones, probably consume the least milk in diets; some women and adolescent girls avoid milk in the fear that it is "fattening"; and some institutions on small budgets use too little milk.

Aureomycin in Fish Storage. Fish storage life may be lengthened by the use of 1 part aureomycin to 1 million parts flake ice, according to Dr. H. L. A. Tarr, J. Boyd, and H. M. Bissett of the Pacific Fisheries Experimental Station, Vancouver, British Columbia. The Cana-

Thrill your diners with delectable *steamed puddings*—during the Holiday Season, and a special treat for *any* day from Fall to Spring.

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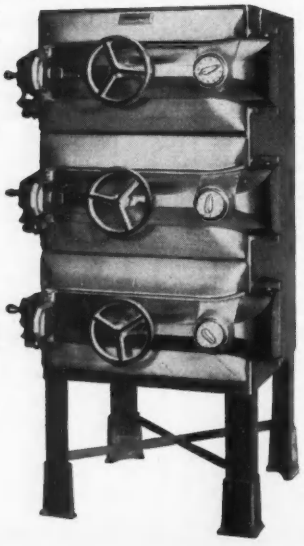

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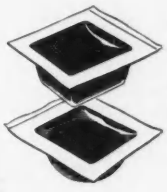

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dian scientists' work was reported at the 124th national meeting of the American Chemical Society in September. Fifteen antibiotics were tested, and only aureomycin and terramycin were found effective in preserving flesh foods. Aureomycin was the more effective; it exerted pronounced antibacterial activity in meat and fish flesh when used in extremely low concentrations at temperatures from 0° to 20°C. Whole eviscerated fish have been preserved by immersion in a solution of the antibiotic shortly after capture, and then icing in the usual way. Fish have also been stored in cold sea water containing the antibiotic. Methods of determining the aureomycin content of treated fish flesh are being studied at present, according to Dr. Farr.

Handling Meat for Freezing. Scrupulously clean and prompt handling of meat for freezing is emphasized by William Sulzbacher of the U.S.D.A.'s Bureau of Animal Industry, for those who put meat in home freezers or freezer lockers. Tests of pork samples after twelve weeks' frozen storage showed that many bacteria which cause meat deterioration or spoilage survive or even increase during freezing. Others survive in a dormant stage and then may increase after the meat thaws and warms up. Still others are unaffected even at 0°F. and may contribute to such deterioration as rancidity of pork fat. A low bacterial load on the meat to be frozen is the only way to assure a low count after freezing. This requires careful sanitation, i.e., clean, cold, fresh meat; clean hands, tools, and wrappings; and a clean meat cutting and preparation surface. Because bacteria develop rapidly on warm meat, it is helpful to keep the meat cold before and after freezing.

Homemakers' Diets. The city homemaker's daily caloric intake averages only about 1780, according to the U.S.D.A.'s Bureau of Human Nutrition and Home Economics. However, their diets appeared to yield adequate energy as calculated by weight related to height. Diets were low in calcium and riboflavin; approached recommended allowances for protein, iron, ascorbic acid, thiamine, and niacin; and exceeded standards in vitamin A. On the whole, older housewives consumed smaller and poorer diets than younger ones.

Homemakers with outside jobs differed little in diet from those doing housework only. Meals eaten away from home, however, tend to be higher in calories, protein, and some other nutrients than the same meals consumed at home. Higher-income families, who eat out more, may have greater nutritional advantage over low-income families than has been realized, particularly if men and children also eat larger meals away from home.

Findings, the Bureau notes, indicate that present dietary standards may need caloric adjustment for women of different ages and activities.

News of State Associations

California Dietetic Association. The California Dietetic Association held its annual fall meeting in San Jose in September. Dr. Russel V. Lee, President, Palo Alto Medical Research Foundation, addressed members on "What Makes a Nation Healthy."

The *Los Angeles Section's* September meeting was held at Methodist Hospital. Dr. Donald C. Balfour spoke on diet in gastrointestinal disease. In October, at the Kaiser Foundation Hospital, the group heard Dr. Frederick C. Scharles discuss "The Diagnosis and Treatment of Thyroid Disease by Radioactive Iodine."

The *San Diego Section* joined in October with the local Home Economics Association to hear Alice Bradley, Nutritionist, University of California at Santa Barbara, talk about "New Trends in Nutrition."

Connecticut Dietetic Association. Members of the Connecticut Dietetic Association were guests at Grace-New Haven Community Hospital on October 8, for the first of a series of Purchasing Institute Meetings sponsored by the Connecticut Hospital Association. Dr. Willard Krehl, Yale University, discussed "Comparison of Nutritive Values of Canned, Frozen, and Fresh Fruits and Vegetables"; Alliene Mosso, St. Luke's Hospital, New York City, spoke on "Prefabrication vs. Carcass Buying of Meat"; and Joseph McGinnis, Pfaelzer Brothers, Inc., Chicago, chose as

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There are many tastes to please in a hospital—nurses, patients, doctors, the administrative staff. In coffee *all* want FLAVOR. Millions enjoy Continental Coffee because it has the *most* in flavor—delicious, winey-rich, full-bodied and unvaryingly fine—kept so by special Automatic Roasting Controls that maintain exact uniformity.

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SALAD DRESSINGS
MAYONNAISE
FRENCH DRESSING
THOUSAND ISLAND DRESSING
CREAM DESSERTS, with sugar and milk, Lemon, Chocolate, Butterscotch, Vanilla, Tapioca and Asst'd.
GELATIN DESSERTS, Orange Lemon, Lime, Strawberry Raspberry, Cherry Asst'd and Asst'd Red. Plain Unsweetened.
MALTED MILK, plain.

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Meat...

and Adequate Protein Nutrition of the Diabetic Patient

Although formerly it was considered desirable in diabetes mellitus to hold protein intake only slightly above minimal requirements in order to minimize metabolic activity, present day treatment recognizes distinct benefits resulting from liberal protein alimentation.[1] Generous allowances of protein heighten the patient's sense of well-being, improve vigor, and augment the organism's inherent protective forces.

For the adult diabetic, desirable daily allowances of protein range from 1 to 1.5 grams per kilogram of body weight.[1] To assure adequate amounts of protein for growth and maintenance in diabetic children, allowances should range from 2 to 3 grams per kilogram. Following acute episodes during periods of inadequate insulin treatment, the concomitant negative nitrogen balance calls for high protein feeding until lost nitrogen is restored.[2] Though caloric intake is restricted for correction of overweight, protein allowances remain unchanged.

Meat ranks high among the foods qualified to provide the desired amounts of protein in diabetic diets. In fact, meat—because its rich store of protein is of highest biologic value—may well contribute a large share of the diabetic's daily protein requirement.[3]

In addition, meat also provides important amounts of essential B vitamins and minerals. Its appetite appeal goes far in enabling the diabetic patient to stay on his prescribed diet.

---

1. McLester, J. S., and Darby, W. J.: Nutrition and Diet in Health and Disease, ed. 6, Philadelphia, W. B. Saunders Company, 1952, pp. 287-299.

2. Pollack, H., and Halpern, S. L.: Therapeutic Nutrition. Prepared with Collaboration of the Committee on Therapeutic Nutrition, Food and Nutrition Board, National Research Council, Publication 234, 1952, p. 56.

3. Cecil, R. L., and Loeb, R. F.: A Textbook of Medicine, ed. 8, Philadelphia, W. B. Saunders Company, 1951, p. 634.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

his topic "Portion Cost Study on Meat and Poultry." Dr. Doris Johnson, Director of Dietetics, Grace-New Haven Community Hospital, arranged for a demonstration of sampling and grading various vegetables and fruits, and a tour of the new building.

Officers of the Connecticut Dietetic Association are: President, Edith Mason Cushman, Connecticut Department of Education, Hartford; President-Elect, Dr. Doris Johnson, Grace-New Haven Community Hospital, New Haven; Treasurer, Evelyn F. Carlson, Aetna Life Insurance Company, Hartford; and Secretary, Barbara Cross, Connecticut Dairy and Food Council, Hartford.

The *Northern Connecticut Dietetic Association's* first fall meeting was held at the Newington Home and Hospital for Crippled Children in September. Members toured the new school wing and the remodeled kitchen. In October, the group met at Mount Sinai Hospital in Hartford to hear Joseph Brody, Director of Social Service, discuss special problems of children in hospitals. This year's officers are: President, Clara Kramer, Mount Sinai Hospital, Hartford; President-Elect, Marjorie Reinhardt, Hartford Board of Education; and Treasurer, Virginia Campbell, Hartford Hospital.

Georgia Dietetic Association. Atlanta was fall meeting headquarters for the Georgia Dietetic Association in October. Dr. Harry T. Harper, University of Georgia College of Medicine, presented recent research findings on heart disease, and Maj. John Westman, Camp Gordon, spoke on public relations. Marjorie Massee of Atlanta, a nutrition teacher in hospitals, illustrated "Seeing South America through a Dietitian's Eyes."

This year's officers for the Georgia Dietetic Association are: President, Margaret Dykes, Georgia Board of Health, Atlanta; President-Elect, Marjorie Massee, Atlanta; Treasurer, Lorene Ray Haynie, Emory University, Emory; and Secretary, Josephine Martin, Georgia Department of Education, Atlanta.

Hawaii Dietetic Association. At the October meeting of the Hawaii Dietetic Association, Katherine Gruelle reported on the A.D.A. Annual Meeting.

Officers for 1953–54 of the Hawaii Dietetic Association, all of Honolulu, are: President, Shizuko Higano Miyamoto, Kuakini Hospital; President-Elect, Ruth Rummel, Leahi Hospital; Treasurer, Ella Bodal, Children's Hospital; and Secretary, Nobuko Shiraki, Leahi Hospital.

Illinois Dietetic Association. The *Chicago Dietetic Association* met in October in Evanston to hear Dr. Alvah L. Newcomb, Assistant Professor, Northwestern University, and Chief, Pediatrics Staff, Evanston Hospital. Dr. Newcomb discussed diabetic children and "Holiday Home," the annual camp for diabetic children at Lake Geneva which is sponsored by the Chicago Diabetes Association.

Indiana Dietetic Association. The Indiana Dietetic Association's annual fall meeting was held at Purdue University, Lafayette, in September. Dr. Mary de Garmo Bryan was guest speaker. Dr. Gladys Vail, Head of the Foods and Nutrition Department at Purdue, addressed the group on "Research in Home Economics." Dietetic interns from Indiana University, Bloomington, and from Indiana University Medical Center, Indianapolis, as well as a number of Purdue students, were present.

Officers for 1953–54 of the Indiana Dietetic Association are: President, Hazel Wessel, Methodist Hospital, Indianapolis; President-Elect, Dr. Cecilia Schuck, Purdue University, Lafayette; Treasurer, Florence Adrian, Indiana Board of Health, Indianapolis; and Secretary, Jeanne Larson, Dietary Department, Indiana University Medical Center, Indianapolis.

Oregon Dietetic Association. The annual fall meeting of the Oregon Dietetic Association was held at Oregon State College, Corvallis, in September. Martha Dresslar, University of Washington, Seattle, spoke on "Latest Trends in Food Technology," and Dr. H. W. Schultz, Oregon State College, discussed "Recent Advances in Food Technology." The meeting also included a tour of the College's newly remodeled Home Economics Building and the new wing of the Good Samaritan Hospital.

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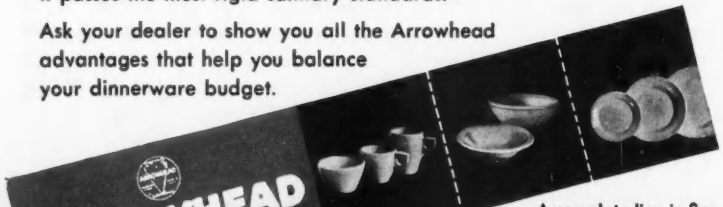

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Among these Standard Brands products a truly outstanding favorite is, of course, the famous Chase & Sanborn Fancy Mark Coffee. When *you* serve Fancy Mark Coffee *you* can be sure each meal will end on a note of real enjoyment. *You'll* find, also, that *every* Standard Brands product can make a real contribution to your food service. What's more, top-quality Standard Brands products cost no more—often less! —than most ordinary products.

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Without obligation on our part, we accept your offer to demonstrate your coffee-brewing formula in our kitchen with our equipment, using Chase & Sanborn Fancy Mark Coffee. (Upon receipt of this acceptance we will telephone or write you to arrange a mutually convenient date.)

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P-22

Utah Dietetic Association. Officers of the Utah Dietetic Association, all of Salt Lake City, are: President, Anna Marie Driscoll, University of Utah; President-Elect, Margaret Parker, University of Utah; Treasurer, Janetta Platts, Salt Lake City Schools; and Secretary, Lillian Fischer Larson.

Washington State Dietetic Association. Members of the Washington State Dietetic Association held their fall meeting at Tacoma General Hospital in October. The program included the following speeches:

"New Methods in Canning"—Frank Bathurst, S. & W. Representative
"Dietary Management Following Gastric Surgery"—Dr. James L. Vadheim, Surgeon
"Food Service on the Airlines"—Morrie Major, United Airlines
"Administration"—John Dobyns, Superintendent, Tacoma General Hospital
"Mass Feeding in an Emergency"—Mildred Bonnell, University of Washington, Seattle

The *Seattle Dietetic Association* began fall activities with a meeting in September, where several dietitians reported on the A.D.A. Annual Meeting. Officers for 1953–54 of the Seattle Association are: President, Evelyn Henry, Maynard Hospital; Vice-President, Betty Kerr Williams; Treasurer, Patricia Smith Dotson; and Secretary, Mary Ishii.

West Virginia Dietetic Association. "Progress—Professional Wise" was the theme used by Grace Bulman A.D.A. President, to highlight the West Virginia Dietetic Association's October meeting at Marshall College, Huntington. The program also included a panel discussion on "The Medical and Surgical Significance of Cardiac Disturbances and Other Diseases Which Require Low Sodium Diets," with the following participants: Dr. Rowland H. Burns, Internist, Huntington; Margaret Ayres, St. Mary's Hospital School of Nursing, Huntington; Evelyn Clark, Head Dietitian, VA Hospital, Huntington; and Rachel H. Ferguson, West Virginia Department of Health, Charleston.

Officers of the West Virginia Dietetic Association are: President, Sister Edwina Zerwas, St. Mary's Hospital, Huntington; President-Elect, Rachel H. Ferguson, West Virginia Department of Health, Charleston; Treasurer, Mary Jane Clements Couture, Charleston Memorial Hospital; and Secretary, Evelyn Clark, VA Hospital, Huntington.

Association Activities

Representative to State Meeting. Mrs. Cora Kusner, A.D.A. Food Administration Chairman, attended the Arizona Dietetic Association meeting in Tucson, November 17, as the national representative.

Exhibits. The A. D. A. exhibit "Achieve Your Proper Weight and Keep It" won third prize among the scientific exhibits at the annual meeting of the American Dental Association in Cleveland, September 28 to October 1.

The food models exhibit illustrating adequate nutrition for a child from 10 to 12 years of age was shown during the American Academy of Pediatrics Convention in Miami, Florida, October 6 to 9. Vera Walker was responsible for the exhibit, assisted by others.

During the First International Dairy Show, held in Chicago October 10 to 17, our exhibit "Achieve Your Proper Weight and Keep It" was displayed. Marie de Greef acted as exhibit chairman, assisted by other members of the Chicago Dietetic Association.

The food models exhibit has been refurbished. At the American Public Health Association Convention in New York City, November 9 to 13, it was used to emphasize the basic idea of adequate nutrition for the aging. Accompanying it was a short bibliography and a new "give away" leaflet for older people, "Forget Birthdays—Enjoy Good Eating." This leaflet is now available at Headquarters office:

Single copy	$ .03
Lots of 50	1.25
Lots of 100	2.00

Representatives at Allied Meetings. Dr. Helen Mitchell, as A.D.A. representative, will attend the meeting of the A.A.A.S. Council and the 120th meeting of the Association in Boston, December 26 to 31.

Gleaming stainless steel tray service... perfect for hospital use!

Legion's new attractive hospital service is seamless drawn stainless steel. No cracks or corners to catch dirt — easy to clean and sterilize. They are unbreakable, non-porous, need no refinishing or replating. Lustrous platinum finish with attractive border decorations.* *No tax.*

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tray production unit provides assembly-line efficiency

AT GREENWICH HOSPITAL, GREENWICH, CONN.

TRAY PRODUCTION UNIT in main kitchen, adjacent to cooking center. Trays move on long conveyor belt between two counters. Attendants load trays from both sides according to a card control which indicates special diets or patients' preferences. Note convenient placement of steam table, coffee urns, toaster, etc. Built-in "Lowerators" dispense trays and dishes at counter level. Loaded trays are placed in insulated tray trucks for distribution to patients.

MAIN DISH PANTRY, showing dish washer at left, glass washer at right. Long shelf in foreground holds trays during unloading process. Pass window at right opens directly to tray production area. Stainless steel dish tables are fully welded throughout. Round corners and seamless, crevice-free tops facilitate cleaning, assure hospital-standard sanitation.

SALAD AND VEGETABLE PREPARATION UNIT — View shows convenient position of work tables in relation to sinks. Note how ample spacing between units permits freedom of movement for personnel. These layout factors help speed procedures. Wall-mounting of stainless steel sinks in background eliminates leg obstructions, permits thorough cleaning of floor surfaces.

● By applying assembly-line methods to the distribution of food to patients, Greenwich Hospital has achieved substantial savings in time and labor. A mechanical tray-loading unit, located in the main kitchen, is the key to an efficient central service system. Trays, moving along a conveyor belt, are loaded by attendants from both sides. All equipment is conveniently placed to speed the operation. Insulated conveyors are used to distribute the loaded trays to the various floors. Food reaches the patients on time, kitchen-fresh and palatable.

The complete food service installation at Greenwich Hospital handles the preparation and distribution of approximately 1275 meals daily to patients and employees. Efficient work flow is achieved through carefully-planned arrangement and functional design of equipment. Seamless, stainless steel construction of individual units assures a high degree of sanitation and low maintenance costs.

This installation, planned and equipped by S. Blickman, Inc., received an Honor Award in the 1952 Institutions Food Service Contest. You, too, can have food service equipment that rates high in every respect—efficiency, appearance, durability, sanitation—by specifying "Blickman-Built."

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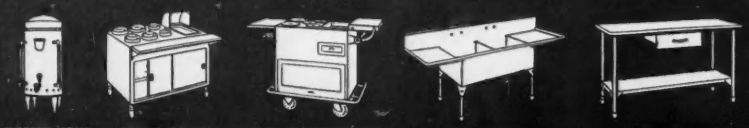

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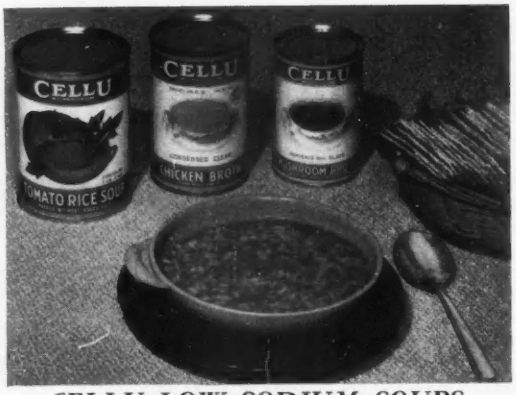

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A chicken flavored soup base powder, for institutional use in Sodium Restricted Diets. 1 oz. makes 1 qt. or 5 servings. 16 oz. jar.

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Model 1411 (illustrated) has glass protected dial, price $15.00

Model 1440 enamel dial, price $10.00

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Northbrook, Illinois

Dorothy Kinnear attended, as the official representative, the *New York Herald Tribune* Forum, October 18 to 20, in New York City.

Winning S. Pendergast represented us on November 9 at the inauguration of Dr. Clarence B. Hilberry as President of Wayne University, Detroit.

Placement Bureau. The first *Bulletin* of the Placement Bureau was published in November. Three hundred fifty copies had been distributed by the end of the first week after issuance. The issue contained 43 situation-wanted notices and announcements of 175 vacancies. Copies are available at a cost of $1 from Headquarters office.

News of Products and Services

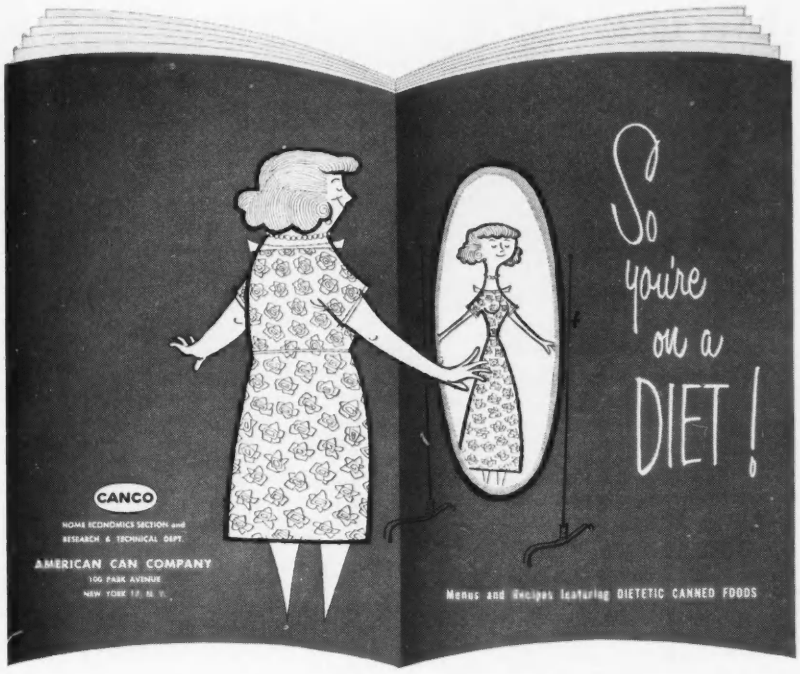
Gerber Products Company announces that "Quads"—the variety pack of four 1-oz. boxes of cereal—will soon be distributed nationally. The unit contains boxes of Gerber's Rice, Barley, Oatmeal, and Cereal Food (a mixed cereal). With "Quads," mothers can follow medical advice to introduce a variety of cereals to young babies without opening several large packages.

The Swartzbaugh Manufacturing Company has made available a small portable food conveyor called the "Ideal Diet-Therm." This unit has its own heating element, complete control system, and thermostatic equipment. The food wells will accommodate any desired combination of full-size or fractional-size steam table pans. It may be equipped with pans 2 or 4 in. deep, and there are thirty-nine possible pan combinations. The Ideal Diet-Therm may be removed from its stand and transported separately. It is completely insulated.

Procter & Gamble has recently published "It's Cherry Time!" a new, nineteen-page booklet punched for looseleaf use, containing quantity recipes for cake, pies, cookies, sweet yeast goods, and deep fried items.

Universal Dishwashing Machinery Company has introduced a single-tank model featuring the new Universal VB dual drive. This drive utilizes one motor to operate the power wash and a separate motor to drive the conveyor mechanism and operate the final rinse. Thus the machine offers separate operation so that, if necessary, glasses could be run through the dishwashing machine after a brush scrub for a final sterilizing rinse without actuating the power wash.

Market Forge Company has designed a new "Model ST-KG Combination Steam-It and 20-Gallon Kettle," providing a direct connected Steam-It pressure cooker and a direct connected steam-jacketed kettle. The steam is furnished by a large, 2-h.p., gas-fired boiler, complete with controls, located in the cabinet under the Steam-It, which operates at 15 lb. steam pressure. The kettle is also connected to the boiler at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the same pressure and will bring 20 gal. water to a boil in less than 30 min. The fuel is automatically controlled so that the gas is on only when steam is needed for either the kettle or the pressure cooker.

International Minerals and Chemical Corporation has issued its sixth booklet of quantity recipes using Ac'cent. The twenty-one recipes, developed and production-tested by the Institutional Service Department of the corporation's Amino Products Division, are for soups, salads, meat and fish dishes, and miscellaneous dishes. The booklet may be separated to form recipe file cards.

Aatell & Jones reports that "Continuation of Food Series" and "Pioneer and Early Autos" were the most popular Doily-of-the-Month subjects, according to a recent poll of restaurant customers. These subjects will be used to create a new Doily-of-the-Month series.

The *California Prune Marketing Program* has recently published "21 Tested Formulas Featuring Delicious California Prunes," a new sixteen-page booklet with pages punched to fit a standard 6½ by 9½-in. three-ring binder. Twenty-one quantity recipes with varying portion yields are given for salads, whips, pies, cakes, and miscellaneous dishes.

Metropolitan Wire Goods Corporation has released a 20-min. sound filmstrip titled "Handling without Hands," to demonstrate the use of wire racks in reducing breakage, handling, time, labor, and cost in transportation, washing, and storage of china and glassware. Fifty-seven photographs and drawings are accompanied by recorded dialogue concerning the places where the racks are being used. A portion of the film shows and describes specialty racks made expressly for certain items, and one part is devoted to the production of wire racks.

Metropolitan Wire Goods Corporation is now manufacturing an eight-compartment stainless steel silver rack, in accordance with the advice of dishwashing experts to wash silver vertically. The rack measures 6½ by 13½ by 5½ in., weighs 4¾ lb., and has 12-in. handles. It can be placed inside any open type standard rack and run through the dishwashing machine.

Harlow C. Stahl Company's Bake-and-Sheet Pan is the newest addition to its commercial aluminum cookware line. The pan is 18½ in. long, 12½ in. wide, and 2 in. deep, and is equipped with steel "Drop Handles" to save space. It may be used for preparing custards, pastry, and puddings as well as for open roasting and display of bulk cooked foods.

Durkee Famous Foods has recently introduced two new products, Onion Flakes and Flavor Booster, to the restaurant industry. Durkee's Onion Flakes are prepared from dehydrated onions, are packed in six 1¾-lb. cans per case, and may be used throughout the year in place of fresh onions. Durkee's Flavor Booster contains monosodium glutamate and other ingredients and may be used on meats, seafood, poultry, vegetables, and gravies. It is packed in 1-lb. and larger cans.

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